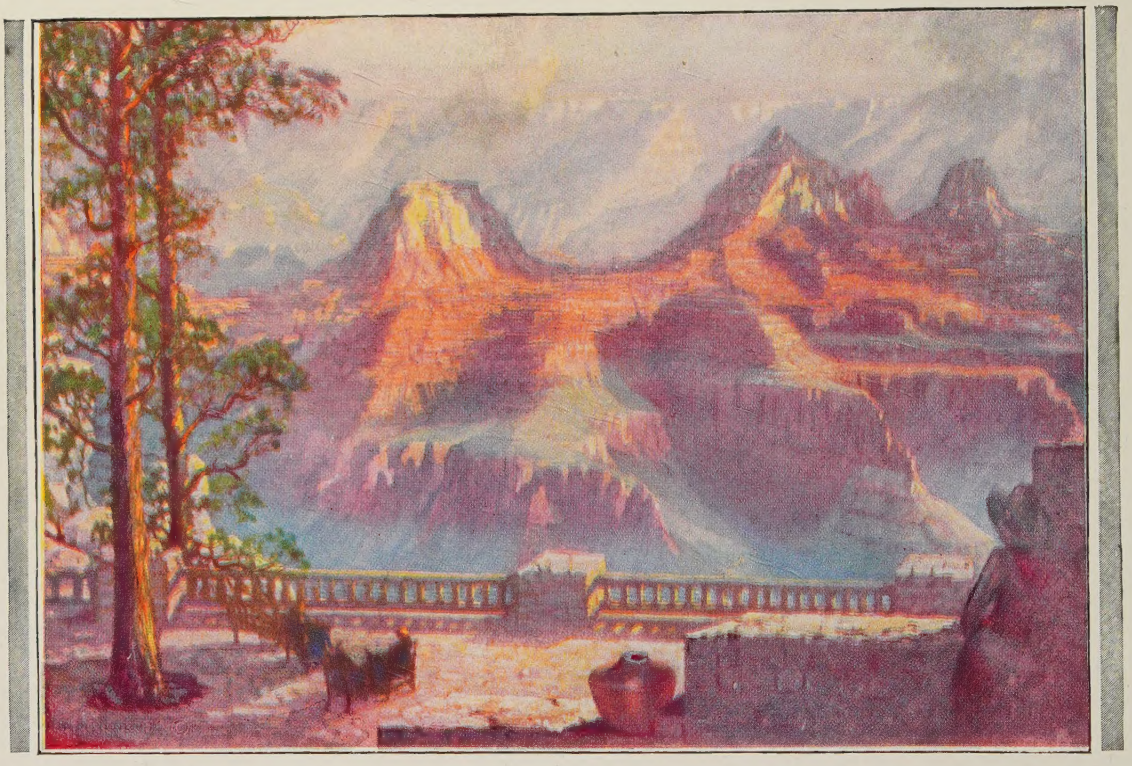
NATURE MAGAZINE

MARCH 1929 35¢ VOL. 13, NO. 3

Union Pacific

THE NEW WAY TO SEE GRAND CANYON NATIONAL PARK



COME linger on this sunlit brink of immensity

Imagine it! To lose yourself in the contemplation of these heights and vast, mysterious depths, drenched with countless rainbows of color, changing subtly and momentarily with the course of the sun! To sojourn in luxurious Grand Canyon Lodge overhanging its highest brink!

Now Union Pacific makes it possible. The new Grand Canyon Lodge, from which this view was painted, clings to the very edge of famous Bright Angel Point! Here you will relax, and amuse yourself, and draw strength from the marvelous climate. Here you will get an unparalleled view of this measureless chasm!

But Grand Canyon is only one attraction on the Union Pacific Utah-Arizona tour.

You will travel in easy riding motor buses, to the prismatic labyrinths of Bryce Canyon and Zion National Parks as well. It is a land of infinite variety. Colossal forests are here palpitating with wild life; strange Mormon villages and forts, extinct volcanoes, ruins of incalculable age. Every morning the world is reborn for you.

You may go independently, or on an Escorted All-Expense Tour, with interesting people from the world over. The trip is exclusive with the Union Pacific, and takes only five days after leaving your Pullman in Cedar City. Shorter tours to individual attractions. The low cost will astonish you. No other vacation gives so much for so little—and with such economy of time!

The season is from June 1 to October 1. Send the coupon at once for detailed information, together with richly illustrated booklets.

General Passenger Agent, Dept. 301,
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Please send me complete information including cost, and booklet:

☐ Zion-Bryce Canyon-Grand Canyon National Parks ☐ Yellowstone ☐ Pacific Northwest and Alaska ☐ California ☐ Dude Ranches ☐ Hawaii ☐ Colorado ☐ Escorted All Expense Tours

Name _____

Street _____

City _____ State _____

Union Pacific

THE OVERLAND ROUTE

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

It's still wild

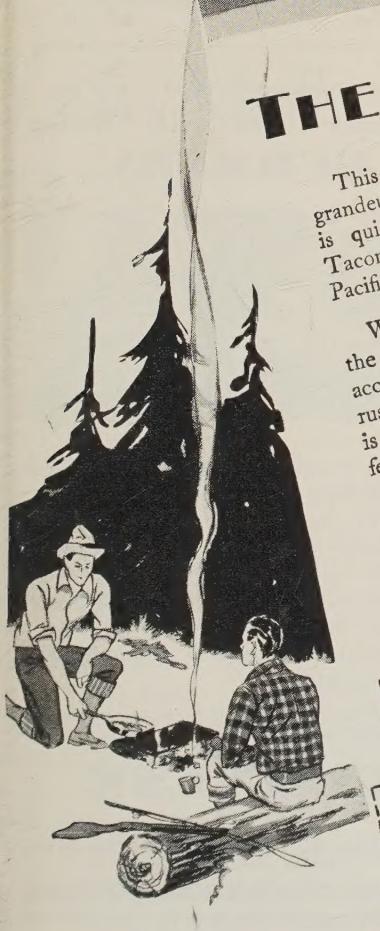
THE OLYMPIC PENINSULA

This peninsula of wild mountain grandeur borders on Puget Sound and is quickly reached from Seattle or Tacoma — both on the direct Northern Pacific route.

While there are cities and resorts on the peninsula offering every type of accommodation from luxurious hotels to rustic cabins, the central mountain mass is a virgin wilderness crossed only by a few Forest Service Trails.

Here are giant forests where thousands of elk, deer and bear are hiding away. Here are crystal streams filled with trout—Lake Crescent attracts fishermen from all parts of the country because of its famous Beardslee trout, found in no other waters. Here are far cool trails to ride, with noonday lunch beside an open campfire — trails that lead into the clouds among lakes and waterfalls and snowy peaks.

Would you like to have a beautiful free booklet and information about a vacation in this wild Peninsula? Or would you care to learn about other Northern Pacific vacation trips — to the Pacific Northwest where you can enjoy unusual sports and scenery — to the top of the world, Alaska, cruising among the mountains up the Inside Passage? The coupon will bring you the booklets and information you want.



NORTHERN PACIFIC RAILWAY

Mail this coupon to
E. E. Nelson, P. T. M.,
30 Northern Pacific Building,
St. Paul, Minn.

Name _____

Address _____

My telephone No. is _____

If student, state grade _____

MY VACATION TRIP

Books or trips I am interested in (√)	Round Trip Summer Fare from Chicago
☐ Pacific Northwest { Portland / Seattle / Tacoma	$90.30
☐ Rainier Park	90.30
☐ Yellowstone Park	59.35
☐ Dude Ranch Vacations	$59.35 to 65.65
☐ Rocky Mts. [Helena-Butte]	61.95
☐ Inland Empire [Spokane]	85.05
☐ Alaska [Skagway]	180.30
☐ Burlington Escorted Tours [all expense]	$140.04 to 239.51
☐ Canadian Northwest	90.30

"North Coast Limited" The Train West! 197

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Sheer granite HALF DOME *...a mile overhead!*

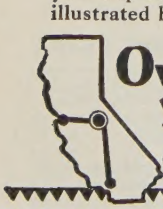
First among all California vacations~ YOSEMITE NATIONAL PARK

How would you enjoy standing in a rainbow-spray at the foot of the world's highest waterfalls... filling your trout-creel from meadow streams and blue lakes in the High Sierra... touring amid the majestic Sequoias, world's oldest living things, in the famed Mariposa Grove of Big Trees?

Take a week on your summer trip West for Yosemite's matchless days of sightseeing—outdoor sports—the nightly firefall, 3200 feet overhead, and novel entertainment!

The colorful Ahwahnee, open all year, offers a wealth of luxury and comfort. $12 a day upward, American Plan. Other excellent accommodations from $1.50 upward in Housekeeping Cabins; $2.50 upward, European Plan and $4 upward, American Plan, at popular Lodges.

All-Expense Tours from $30 to $76.75, cover 2 to 4 days in Yosemite. Ask any travel agent to plan your trip or write us direct for free illustrated booklets.



Overnight from San Francisco or Los Angeles

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Dept. 132, Yosemite National Park, Calif.

Please send me Yosemite picture booklets

NAME_____

STREET & CITY_____

IT is a poor rate war that doesn't do someone some good. The Cunard Line recently placed the steamship *Caronia* on the New York to Havana Service. This was in competition with various American lines. A rate war has started. The immediate result of this is an announcement of a reduction in fares by some of the steamship companies plying between New York, Havana and West Indies points. Passengers are being benefited, and at the same time more ships are available for travel.

* * *

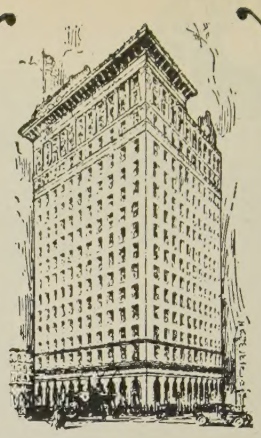
The All-Year Club of Southern California announces that the influenza reached the Southern California section late in the year, took a little over three weeks to reach its peak and then within two weeks entirely petered out, and makes the statement that it is now June in Southern California and that the outdoor land is a healthful place to spend the winter months. Reports received from Florida and other southern state resorts are that this season is proving to be one of the best in many years, and at this writing early in January the indication is that the railroads and the steamship companies running to these southern winter resorts will do a greater business than they have ever done before. Fine hotel accommodations, all necessary comforts on steamer and on railroad train, together with the attractive climate, combine to entice hundreds of thousands of Americans to short or long stays in the warm southland to escape the rigors of the northern winter.

* * *

Trans-Atlantic steamship companies already announce an unusually large number of bookings for spring and summer tourist travel to Europe, and as more and more ships are being turned into what are known as cabin ships, and as the rate is moderate, European countries are placed within comfortable financial reach of many Americans who have not hitherto been able to make the trip. Steamship companies report one interesting indication in the travel already booked in that many people who have been to Europe during the last three or four years are again going to visit the countries which they were not able to see on their first trip.

* * *

The California opened its eighteenth season on January 1st in its new playhouse at San Gabriel, less than an hour's ride by electric car from Los Angeles. This beautiful dramatic spectacle, written by John Stevens McGroarty, and presented by a cast of more than 100 actors, singers and dancers, portrays the story of the Franciscan Missions founded by Father Junipero Serra, and gives a vivid picture of California's romantic early history. It



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540 rooms with bath
Single, from $4
Double, from $6

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Santa Barbara
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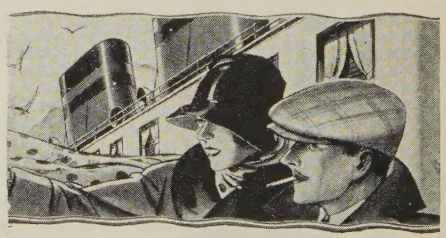
Those who Summer abroad will Winter *in* BERMUDA



A new American fancy, this winter siesta in Bermuda... and the 48 hours each way. Enjoyed equally by habitués of the great ocean liners and those who are getting their first taste of Transatlantic travel. A sailing every Wednesday and Saturday on the new 20,000 ton motorship "Bermuda" and the famous "Fort Victoria."

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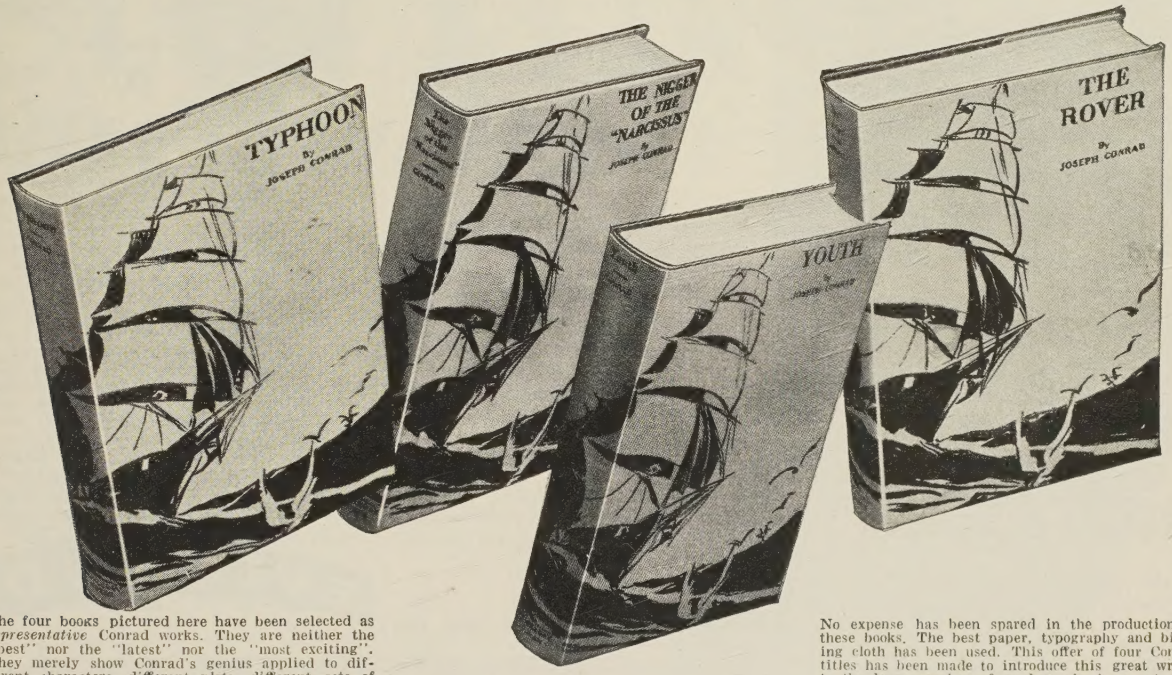

The four books pictured here have been selected as *representative* Conrad works. They are neither the "best" nor the "latest" nor the "most exciting". They merely show Conrad's genius applied to different characters, different plots, different sets of circumstances, with the same invariable result—concentrated entertainment for the reader.

No expense has been spared in the production of these books. The best paper, typography and binding cloth has been used. This offer of four Conrad titles has been made to introduce this great writer to the large number of readers who have not read him before.

You May Have Them On Approval

TO INTRODUCE Joseph Conrad to *you* who read only for the entertainment and experiences that good books bring you, we have selected four of his masterpieces of the sea to be mailed on approval. That is the only way this great writer can be fully appreciated. You must live with him on shipboard, make friends with his flesh-and-blood characters, eat and drink with him in strange ports and uncharted seas to fully understand his tremendous power.

Joseph Conrad died before his books had brought him the fame he deserved. He was not well known. His books circulated in a very small but enthusiastic circle of critics and literary friends. Slowly his reputation grew. As book after book came from the richness of experience that had been his, all England and America rose to honor him. Now no man can claim to be well read without some knowledge of those gripping tales.

It is impossible to say which of all his books is the *best*. Each one has its own appeal. Each one will seem better than the last as you read them. Each critic, asked for an opinion, has his own favorite. *You* will have your own when you have read him.

Four representative works, *The Nigger of the Narcissus, Youth, Typhoon* and his last book, published almost at the moment of his death, *The Rover,* have been chosen for this introductory offer.

Now Only $5.00

For a limited time you can examine these four books in your own home, you can read them at your leisure and *then* decide if you want them. The books are the regular, standard edition, usually sold for $2.00 each. You receive all four of them for $5.00 and *you do not pay for them until you are sure you want them.*

Mail the coupon at once. Test Conrad by your own standards of reading pleasure. If he does not charm you as he has thousands of others, return the books at our expense and the transaction has cost you nothing.

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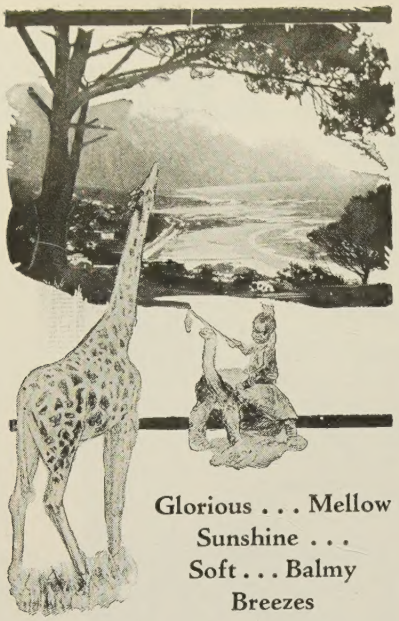
I will examine the four volumes of Joseph Conrad and either return them or remit $5.00 in full payment within a week.

Name.....

Address.....

City.....*State*.....



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while the bitter cold of late winter drives you indoors at home.

South Africa is truly a year-round travel land . . . climate always invigorating . . . a land of glorious sunshine, romance, mystery and wonder . . . a land of warmth, of beauty, of glorious flowers and luxuriant fruits . . . a land of comfort, gaiety, and sport, where majestic scenery and age-old mysteries thrill you.

It is the only place in the world where you see

Speedy, Preening Ostriches
Kruger Big Game Preserve
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7000 Feet Deep Gold Mines
Mysterious Zimbabwe Ruins
The Magic Cango Caves
Barbaric Bantu War Dances
Quaint Colorful Kaffir Kraals
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Majestic Victoria Falls

If sports interest you, enjoy surf bathing on unrivalled sea-beaches—sea angling from rock-bound coasts for the finest sporting fish of the world—trout fishing in Golden Rivers—the angler's paradise—golf on sporty courses midst nearby towering mountains—year-round outdoor tennis on fast, true, antheap courts.

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has been witnessed and praised by travelers from all parts of the world. A splendid new pipe organ has been installed in the Play House this season. Los Angeles is reached by three fine fast trains of the Union Pacific System.

* * *

It is expected that by the spring, motor roads will be open from the east into Jasper Park, Alberta. Jasper Park, with an area of 5300 square miles, is the largest park in America, and at present is accessible only over the lines of the Canadian National Railways.

* * *

As is commonly known, the moon plays an extensive part in the life of each individual, lending flavor to that essential element—romance. An analysis of the subject shows that passengers traveling to faraway lands on de luxe cruising steamships are in search of romance and adventure in addition to the more practical benefits derived from a sea voyage. Therefore, the announcement that "The New Moon" will be enjoyed regularly during the cruise of the *Resolute* of the Hamburg-American Line around the world is good news to the passengers planning the trip.

* * *

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WORLD'S greatest sport — *"Evinruding!"* More fun than flying. More thrills at 30 than from a car at 60 M. P. H.

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MAGIC ISLAND was the Guild selection for January. Upon publication it leaped to prominence. It has already been the subject for feature articles in all important reviews of literature in America.

THE book pictured here is only one example of the discrimination of the Guild Editorial Board. The history of the Guild is almost a continuous stream of such outstanding works. Every field of writing has been included.

More than 70,000 members now receive the monthly selection in its distinctive binding at an annual saving of *more than a million dollars. You* can realize a part of this saving if you join the Guild now.

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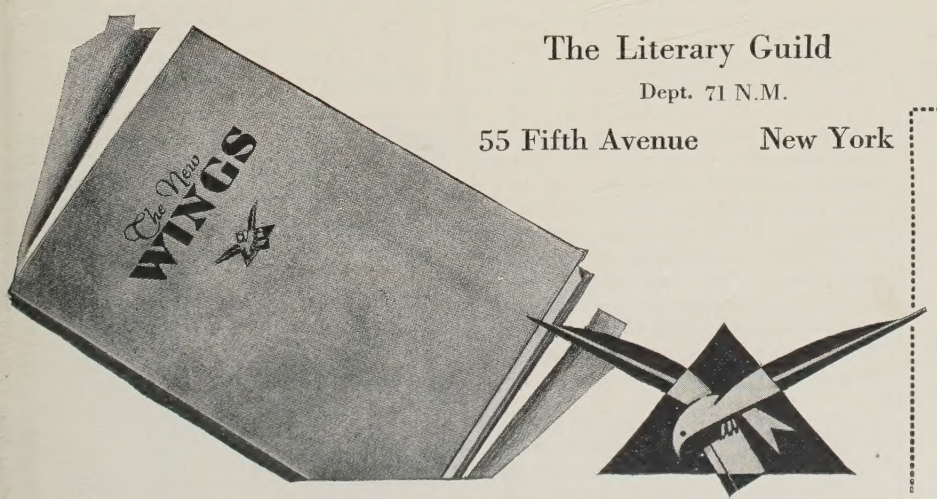

The Literary Guild

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55 Fifth Avenue, New York, N. Y.

You may send me a copy of the booklet WINGS free and without obligation to me.

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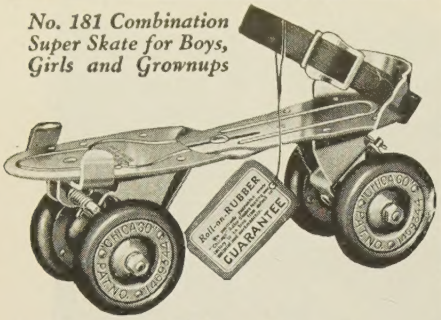
No. 181 Combination Super Skate for Boys, Girls and Grownups



Oh, Boy! . . . They Put Wings on Your Feet!

ROLL ON Rubber

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Out in Hollywood you see all the famous movie stars skimming around on "CHICAGOS" just like they had wings on their feet.

These Roller Skates are swift-moving and easy-running because they have patented ball-bearing wheels, and hard composition Rubber Tires that give the greatest speed without noise, and outlast steel wheels two to one. Also many other special features and improvements. Be sure to look for *Guarantee Tag.*

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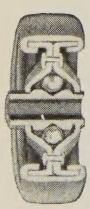
Get this Pin FREE

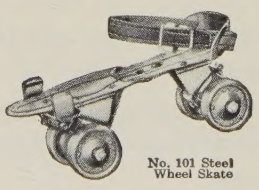
Thousands of boys and girls belong to the "Roll on Rubber" Club and wear this handsome pin. Send 10 cents and your Dealer's Name, get free gold finish club pin, certificate of membership, and booklet "How to Roller Skate."



Note Double Tread of Hardened Steel. Outer tread is crimped over Inner Bushing Tread and will last three times longer than other steel wheels.

New Double Tread "Triple-Ware" Steel Wheel Roller Skates

These New "Chicago" Skates are the Strongest — Speediest and Longest Life Skates made. *New Double Tread Steel Wheels* are guaranteed *not* to come apart.



No. 101 Steel Wheel Skate

SPECIAL OFFER to March 31

This remarkable low-price introductory offer good only until March 31st. If your dealer is not supplied send us his name with your order direct, enclosing $1.67. Order today.

$1.67 Regular $2.25

Chicago Roller Skate Co.

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is a leisurely journey by sea to Florida —restful, invigorating, inexpensive. The large ships of the Merchants and Miners Transportation Co., now sailing from Baltimore and Philadelphia to Savannah, Jacksonville and Miami, offer all of these features; cuisine is of the best and no modern convenience is lacking in the equipment of the vessels; spacious lounging, smoking and music rooms; broad decks for comfortable relaxation in the open.

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The S. S. *Pennsylvania* is the largest commercial steamer ever constructed in the United States, and when completed will give the Panama Pacific Line, which operates between New York, and San Diego, Los Angeles and San Francisco through the Panama Canal, the three largest, fastest and finest steamers under the American flag, suitable for almost any trade and particularly serviceable for military purposes.

* * *

Pigeons large as young turkeys, and costing some six hundred dollars apiece; whistling tree ducks; eared Manchurian pheasants with tail feathers rivaling those of a bird of Paradise; Java jungle fowl, progenitor of our barnyard chickens; a Papuan cassowary; the great Argus pheasant of India, and a rare hyacinth macaw are among the recent additions to the aviaries on Santa Catalina Island, a noted Southern California vacation resort. It is intended to make this one of the outstanding bird collections of the world, and hundreds of rare specimens have been procured from all parts of the world, during the last few months. Admission to the aviaries is free to the public. Santa Catalina, also noted for its Submarine Gardens, and its varied facilities for outdoor sports, is thirty miles south of Los Angeles Harbor, and has excellent daily steamer service.

* * *

Open-top observation cars, carried during the winter season by the Union Pacific Gold Coast Limited between Yermo, California, and Los Angeles, afford the traveler an unobstructed view of one of Nature's grandest transformation scenes. Leaving the arid region east of the San Bernardino Mountains, the route crosses the range by way of Cajon Pass, and descends in a few minutes to the blossoming citrus groves and flowers of San Bernardino; then passes a succession of smiling garden cities to arrive at Los Angeles, metropolis of the Southwest.

* * *

News was received recently at the New York office of the White Star Line by cable from Liverpool headquarters, that it has been decided to bestow the name Britannic on the new 27,000 ton motor vessel which is now under construction at the Harland and Wolff yard at Belfast. This steamer is destined for the company's Liverpool-New York service, and will be the largest British motor vessel and the largest vessel sailing out of Liverpool.

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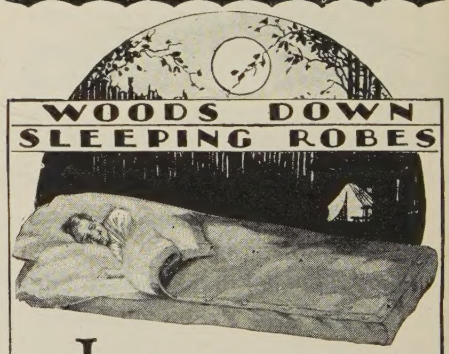
Get away from the dusty road! Enjoy the relaxation of canoeing in an Old Town. Old Town Canoes have the grace and beauty of real Indian lineage. Easy to handle, and perfectly balanced. Priced as low as $67. From dealer or factory.

Write today for free catalog. It shows and prices many light, water-tight models. Paddling, sailing and square-stern canoes, extra-safe Sponson models, dinghies and sturdy family boats. Also speedy craft for outboard motors—racing step planes and hydroplanes. Old Town Canoe Co., 993 Main Street, Old Town, Maine.

"Old Town Canoes"



In the Antarctic with Commander Byrd

WHEN the Byrd Antarctic Expedition sailed away to explore the South Polar Cap, Woods Arctic Down Sleeping Robes went along, *purchased for their merit.*

Commander Byrd and his staff chose Woods Robes for two reasons. They had proved their great warmth on many other important expeditions, in weather ranging from temperate to the most bitter cold. And they were much lighter and more comfortable in all weather than other bedding.

For complete comfort under all conditions, use a Woods Down Sleeping Robe for camp, cabin or sleeping porch. Sold by leading stores. Where not displayed, please write to us. Booklet and prices sent FREE.

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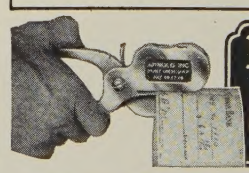

Be Careful in Writing Checks!

Check-Raisers Are at Work!

Modern business demands modern protection against clever check raisers. They can easily alter the amount of any check that is not protected. Losses from fraudulently manipulated checks are estimated at $250,000,000.00 in 1927. Get modern protection by using the new model Arnold just out. The 1929 Arnold will give you 100% protection. Does work equal to machines costing $60.00 or more and yet costs no more than a good fountain pen. Prints and shreds the exact amount in acid-proof ink. Self-inking. Automatic feed. Unconditionally guaranteed for five years. Write for free trial offer. No obligation.

SEND FOR FREE TRIAL OFFER

Arnold Check Writer Co.

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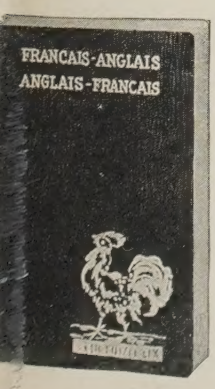

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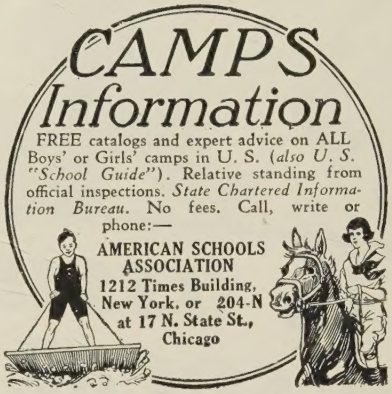

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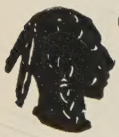

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The American Nature Association seeks to find for Nature Study an essential place in every School and in every American Home. It is working for Forest and Wild Life Protection along sane, economic lines. It believes that clean, healthful Out-of-Door Recreation is the key to Good Citizenship

Report to the Members of the American Nature Association by President Arthur Newton Pack

"To our hundred thousand old members, and particularly to the ten thousand men and women who have joined the ranks of our Association for the first time during the past year, it is indeed a pleasure and a satisfaction to report the progress of our mutual endeavor. Always a national institution, yet with countless members and friends in Canada and all over the world, the American Nature Association today has more members in California, for example, than we had in the entire country five years ago," President Pack says in opening his annual report.

On this page is a summary of the annual report of our President, Mr. Arthur Newton Pack. A copy of his report in full will be mailed to any member of the Association on request.

This growth in the numbers and influence of our Association, Mr. Pack continues, has been reflected in the doubling of the size of the Association's home, which houses about forty men and women carrying on the educational work. The editing and publication of *Nature Magazine,* he emphasizes, is but a part of the work being done.

During the year, the report points out, the Association has continued its leadership in the nation-wide movement for protection and beautification of our roadsides, distributing circulars and posters and other educational matter. The Association, also, has conducted an inquiry into the situation regarding the problem of privately-owned lands within the boundaries of Yosemite National Park as a prelude to a solution of this problem. A similar investigation is being made with relation to other National Parks having such lands within their borders.

"Our Association stands squarely for the protection of wild life," the report states. "In the last two decades we have progressed far along this road through laws for the protection of song birds, the creation of the Migratory Bird Treaty Act, and better game laws; but there is still much to be done. Cruelty to domestic animals has been largely controlled, but no abuses today equal that of the steel trap. Means must be found by which it can be abolished, not merely through law, which will be difficult to enforce, but by the encouragement of fur farming and by continued intensive public education looking towards a changing attitude on the part of the people. Our Association has published 'Our Disappearing Fur Bearers' in bulletin form, illustrated with color plates of the animals, and is following this with 'Our Debt to the Fur Bearers'."

During the past year the field staff of the Association completed studies of wild animals in Glacier National Park and the making of the great educational picture, "Camera Hunting on the Continental Divide". Closely connected with this activity is the work of the Extension Department of the Association in managing the lectures of Mr. William L. Finley and others to the end that unique educational motion pictures may be widely seen. Also in the educational field the research of Dr. William Gould Vinal in the field of Nature Education in the summer camps was made possible by our Association, and assistance was given to the Nature Lore School held under the auspices of the Co-ordinating Council on Nature Activities.

In the field of Nature Education from the teaching point of view a distinct contribution was made through the publication of the *Nature Almanac.* This was followed by the founding of the new quarterly known as the *Nature and Science Education Review.*

In the field of forestry the Association has maintained the closest affiliation with the American Tree Association in its leadership in the forestry movement. General Nature and conservation articles have been supplied to the public press, and the National Flower Vote has been inaugurated as an educational contribution.

Concluding his report, Mr. Pack says: "Your President and the Board of Directors desire to express to each and every member of the Association hearty appreciation of their co-operation during the past. Without your continued support it is impossible for the good work to continue. The American Nature Association represents far more than a magazine to which you may desire to subscribe. It is, we fondly hope, the greatest single national agency of its kind for education and conservation. Our possibilities for continued growth and service are unlimited—they depend upon you. Will you not join with me in adopting as our slogan—'Once a member, always a member'."

Bell and Howell announce the release of three new flower films in the series made by Arthur C. Pillsbury. These are remarkably beautiful reels, as anyone who has seen other Pillsbury films well knows, and, in fact, they are sometimes almost unbelievable. Their educational value, showing the growth and opening of flowers, is outstanding.

* * *

There may be some one of our readers who give a left ear or so to own a Graflex (a most natural ambition) but cannot quite make the financial grade. In this case he or she may be interested in the outfit which Dr. James F. Moon, 545 Central Avenue, East Orange, New Jersey, would like to dispose of. He says he is merely through with photography and has a revolving back Graflex, 4 by 5, with Goertz lens, F4.5, Lumiere color screens cut round and mounted in cork rims to fit over lens, and in perfect shape. Ninety dollars, F. O. B., takes the outfit. Take it up with Dr. Moon.

* * *

Just as we were going to press with this issue news came from the DeVry Corporation that they have worked out the mechanics of talking movies in the home. This is by means of the DeVry Cine-Tone. Space and time does not permit going into details but all information relative to this development, as well as lists of the synchronized films, can be obtained by addressing this department or the DeVry Corporation.

* * *

Outboarders Organize

The large group of enthusiasts who skim the surface of lakes and streams equipped with outboard motor motive power can now get together with their fellow outboarders through the National Outboard Association which has recently been formed. This organization is designed to give national service of various kinds to outboard motor owners and to devote itself in a national way to improving various conditions affecting the physical use of boats. Full information about the plans of the new organization may be obtained from the temporary chairman, Mr. H. Biersach, Evinrude Motor Company, Milwaukee, Wisconsin.

* * *

Need A Microscope?

Although it may have been disposed of (magazines take such a long time between preparation and appearance) Ernest Clive Brown writes us that he has a fine low-powered microscope with a No. 2 eye piece and 1⅔ and 1—1½ inch objectives in a neat oak case with key, virtually as new. He says it is a bargain—and it certainly sounds like it—at fifty dollars. Mr. Brown can be addressed at 52 Vanderbilt Avenue, New York City. This is passed on for the benefit of our members.

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NATURE CALENDAR

MARCH

by E. Laurence Palmer

EVEN on the northern borders of the United States, the season will be sufficiently advanced in March that the first honey bees will be out. We will see them clustered about the broken twigs of maples and other trees drinking the sweet sap or calling our attention to the rather inconspicuous flowers by their buzzing. It is interesting to know in connection with honey bees that a paper was published in March by Lloyd R. Watson of Cornell University in which he announced that he had been able to produce fertilization of queen bees by sperms taken from drones artificially. The secret of his success lay in the addition of a mucous plug which prevented the sperms from escaping. The value of the discovery lies in the fact that it permits the application to bees of the laws for improving breeding which we have learned from other animals. Heretofore, this application has been impossible since the queens would not mate with a drone except in the natural flight which did not permit the mating desired by bee-keepers. An interesting side-light rests on the fact that an impotent queen may be used for the storage of desirable sperms for use with another queen, possibly after she has been sent across the continent through the mails. This announcement will undoubtedly do much to improve the returns to man from bees.

As you may know, the nature of the honey produced by bees is greatly influenced by the plants from which the nectar is collected. In some cases, bees produce black unpleasant honey while in others it is clear and desirable. Examination of honey frequently shows it well supplied with pollen grains. The species of plants from which this pollen came may often be determined since there are keys to the identification of the pollen of many common plants. This recognition of species of plants by their pollen has led to greater appreciation of the value of many weeds that otherwise seemed to be useless. In Iowa, for example, the bee-keepers objected to the elimination of plants on rights-of-way along roads and railroads since these plants were useful in connection with bees.

As the season advances, of course, new plants will come into bloom and serve as lunch counters for the bees. Signs of winter will become obliterated and the world will begin to be "laughin' itself on de face", as Drummond says. It may seem that way to us but with Byrd on the Antarctic continent things may be entirely different. In fact, seventeen years ago this March, Scott and his brave band who reached the pole in January were wiped out eleven miles from their camp by a most disastrous blizzard. Let us hope that Byrd is much more fortunate.

March is also rather famous in the history of exploration in that it was in this month that Stanley started into Africa in search of the lost Livingstone. This was in 1871. In March of the next year he started on his return trip with the news that the explorer had been found.

We do not need to go to the wilds of Africa or the bleak continent of the Antarctic to make worthwhile discoveries in March. To most of us explorations of these continents will be through Akeley and Trader Horn and Byrd. But we still have our own good senses to use to explore the wilds of our back yards and to help us make our living off the land.

Many may watch the birds feeding on the red torch-like fruit-clusters of sumac in March. How many of you have thought to make "lemonade" for your own palate from these fruits? Mix a little of this "lemonade" with grape juice and see what a unique flavor is produced.

There are plenty of roots to be found in March that will tickle your palate and among these are sassafras, toothwort, wild ginger and their kind. There are plenty of others that are medicinal or even poisonous. Among these may be bloodroot, dock, mandrake and the favorite Solomon's seal.

THE STAMPEDE

Reproduced from an original etching by Carl Rungius

NATURE MAGAZINE

Volume 13
Number 3

March, 1929

WE SHOT A FINE BULL ELK
But so far as is known he still roams the hills where we saw him—for he was shot with a camera

A QUESTION of TASTE

The Double Lure of a Mineral Lick

by Arthur Newton Pack

President of the American Nature Association

Illustrated by William L. Finley and the Author

RANGER BUCHANAN had found a lick. This was no mere man-placed block of rock salt, but a great landslide scar where winter storms had sent tons of earth tumbling headlong down the gorge of Coal Creek and uncovered a soft powdery rock which had not been evident before. Was there some faint scent, or had some stray elk or deer discovered it merely by chance? Now every horned creature in the region seemed to know that here was a health-giving substance,—a moderately alkaline mixture of iron and aluminum salts, so the chemist told us after analyzing our samples. But what did the animals know of chemical names? A month ago Buchanan had found it while on the lookout for poachers on the nation's preserve. He had reported to his chief, who knew we wanted to study elk; and here we were.

This is the first of a new series of Camera Hunting articles describing the experiences of the Nature Magazine party during the summer of 1928—the second season in Glacier National Park, Montana, and the Canadian Provinces of British Columbia and Alberta. Next month's article contains a thrill for the reader of these pages.

The American elk, or Wapiti, is the most beautiful and stately of all the deer tribe. He is not really an elk, for the name really belongs to the elk of Europe, an animal very closely related to our moose. Some of the Indian tribes called him Wapiti, and we might well let it go at that, believing that it is a good name. At any rate, when I first saw one of these great, tall, antlered bulls looking at me as I crept to the edge of the lick, my heart certainly went wapity-wapity-wap. I remembered that once—once upon a time—these handsome fellows had ranged from the Atlantic slope to the Rocky Mountains and beyond to the very Pacific; but now there were but few left and most of those were here in the Rocky Mountain woods. While the elk are content to stay in the mountains during the summer, the deep winter snows

drive them down to the valleys where men make fences out of piled antlers.

We had traveled by train to the little flag station of Red Eagle on the southern boundary of Glacier National Park, to stand upon the diminutive platform and watch the transcontinental steam away. Then, shouldering our camera packs along the short trail to the middle fork of the Flathead, we ferried the swift crystal current in a rowboat and joined our pack train beyond at the point agreed upon several days before. Back in the saddle again after ten months of people and cities! A trail winding through the spruce forest, and at the end one of Vic's suppers, bed rolls and, most assuredly, the stars overhead!

Boots and saddles again while the morning dew still silvered the grass. No talking this time. Elk tracks cut the trail, here, there, everywhere, crossing and recrossing our path. Then at a blazed tree we dismounted, unlimbered our cameras and followed the marks of innumerable cloven hoofs toward the creek.

Crash! "Look! Two elk running through the brush!"

"Worse luck—we have startled the animals before we can reach the opening where we can photograph. There must have been outposts or sentinels between the lick and the trail."

"Listen—that curious high whistle is an elk calf calling."

Stumbling noisily, as humans do for all their efforts at silence, we emerged abruptly upon a great eroded slide of clay-like material, which fell away from the brink in steep descent to Coal Creek, a hundred feet below. A band of about fifty elk had been pawing and licking the soft soil for the sake of the alkali or mineral contained therein; but, as the animals above stampeded, the whole herd broke away and charged downhill into a belt of trees along the stream. A few moments later we saw two bands, each herded by a large bull elk, strung out in single file as they climbed the opposite bank. Had we lost our chance for pictures? Patience would tell. Quietly we lay in the brush and after a few moments a lone cow and calf appeared from the thicket below and climbed the bank to delve in the mineral clay. Finley sneaked down behind a log and got a few feet of film before the mother elk and her offspring became nervous and trotted away. We saw no more elk, but to the surprise of everyone a Rocky Mountain goat nanny and her kid appeared on the opposite slide, perhaps a thousand feet away across the stream. The mountain peaks were some miles distant, and she must have traversed a considerable area of forest between this natural lick and her ordinary home. It is very rare to see a goat at so low a level in the summer time. The nanny and her kid worked back and forth across the

MARY BECAME FRIENDLY, ALMOST FAMILIAR

At the left is shown a mule deer, caught on the movie film, bounding like a rubber ball

OVER BARRIERS THAT TRIP UP HUMANS

Below: Bill Finley tries to discover the wherefores of the mineral lick and gets a specimen for analysis

slope, licking the soil from time to time. They were still there when we left to return to camp.

After breakfast the next morning we again rode up the trail. As we cautiously approached the edge of the lick a band of ten animals could be seen about two hundred feet away. The cows, with their calves, quickly took flight and trotted down the well-marked trail toward the creek; but now a splendid bull seemed to materialize from the overhanging woods and walk slowly along the steep clay slope. I had put on the seventeen-inch telephoto lens and was only concerned lest the power should be too great for the nearness of the animal. The camera buzzed softly, and the big bull, who was really a remarkably fine specimen, seemed to lose his first fear of the silent human figures on the bank above him. Knowing that he could easily see us, we thought it best not to try to hide, but to appear busy about our own affairs, being careful only to make no sudden movement. This plan worked so well that after a while I could even wind the camera without making him unduly nervous. The big Wapiti stayed approximately in one spot, and there was very little action for the movies, until a feeling of nervousness suddenly possessed him and he, too, trotted swiftly down the worn path. Thereafter nothing happened. We simply waited and watched the mountain goat nanny and her kid, which we had observed the day before. They fed all across the opposite slide about a hundred feet down from the top; but, as noon approached, the old nanny also made her way up into the timber; and with the aid of the glasses we could see her lie down just within the shadow, the kid with her.

I spent an hour cleaning and repairing lenses, which had loosened up in some way from the horse transportation. The nanny and kid came down the opposite side of the lick to the very edge of the creek and appeared about to cross toward us. However, at the last moment she seemed to scent danger and worked around back up the hill. About three-thirty a smaller bull elk, but nevertheless a fine, full-grown animal, came up toward the lick from the brush along the creek. He sauntered up to the very top of the slide and gave me a number of good chances with the big telephoto lens before, like the others, he grew nervous and trotted away down the trail towards the crossing.

It was then that Bill Finley had a real inspiration—a brain wave we called it then; but none the less, next morning found our party of four divided. With repeated cautions to the others not to approach the upper side of the lick until a prescribed hour, two of us crept down to the creek and worked along the bank until the signs indicated that this was

THE WHOLE BAND PLUNGED THROUGH THE WATER
A few seconds later they were lost among the trees and only the rushing stream disturbed the silence

the main animal crossing. It was not hard to find, for the elk trail had been cut deep with the pounding of countless sharp hoofs, and the brush along the sides was worn away.

"Now one of us ought to hide up here in the bushes while the other crosses over to the opposite bank," whispered Bill. "Whichever direction they come, we'll shoot 'em from both sides. Shall I cross, or will you?"

Crack! Swish! Thump! Nearer and nearer came the sound. It meant just one thing—Wapiti! They were coming on the run; coming directly down the hillside on top of us.

"Quick, get into the bushes behind that tree! There's no time to cross over or anything. Get a wiggle on!"

Somehow we found ourselves on our knees far enough above the trail to avoid being trampled. We were barely in time, for at that instant three cow elk rushed down the slope, taking in effortless leaps logs and obstructions around which we had struggled painfully. Straight toward us, past at a distance of only a few feet, and then out, over and into the water, which flew into shining particles of spray. A calf clung closely to its mother. For an instant the vanguard paused in midstream, only to leap forward as with another crash a great, antlered bull bounded clear over log and bank and landed close behind them. Quickly the whole band plunged through the shallow water, wheeled to the right, and swung into a long, distance-covering trot. A few seconds later they were lost among the trees and only the rushing stream disturbed the stillness.

"I got 'em, Bill. Did you? We must have misjudged the time it took us to get here, for those animals were certainly running from something in the lick, probably from our own party."

Bill merely held up his hand and motioned, for there were more sounds above us; and immediately another band of Wapiti came tearing by. We needed no telephoto lenses. There hadn't been time to fix them, anyhow. Once more the water churned into silver beneath three more cows and a slightly smaller bull—once more the glorious thrill, the buzzing of motion picture cameras—once more, silence.

Finley crossed the creek and set up his camera in a blind beyond. Hours passed. The Wapiti had been frightened and were suspicious.

SPECIAL PERSONALLY-CONDUCTED TRIP TO GLACIER PARK, OPEN TO MEMBERS OF THE AMERICAN NATURE ASSOCIATION AND THEIR FRIENDS IN JULY, 1929

Nature Magazine announces the inauguration during July, 1929, of a special and personally-directed tour through the wonderland of Glacier National Park. The itinerary, which will include two weeks in all, has been planned carefully to enable the party to see and photograph bighorn sheep, Rocky Mountain goats, deer, bears, marmots and many more of the smaller wild animals of the region. The articles on the American Nature Association's expeditions to this beautiful country have given many of our readers a picture of what it holds, but anyone who has visited Glacier will agree that it must be seen to be really appreciated. The number of persons making this tour will be strictly limited owing to its specialized character. Applications should, therefore, be filed immediately with the Travel Editor of Nature Magazine.

One lone cow appeared upstream for a few moments and then hastily trotted back. She was the last. Indeed, although we left the lick strictly alone for a day or so and then returned cautiously, we never had another chance. The message had gone out that the mineral lick was being used by humans; and as far as the Wapiti were concerned, we were welcome to eat all we wanted of the alkaline iron and aluminum salts—but certainly without their company.

OUT AND OVER AND INTO THE WATER

The stream flew into shining particles of spray as the band of elk dashed into it

We fished successfully and hoped in vain; the elk were too suspicious. But a mule deer doe made our acquaintance and came each morning and afternoon to our camp. Vic, the cook, put out salt for her in several places, but she did not seem to care for it. Mary, for we soon felt intimate enough to name her, had a predilection for camp fire ashes. No doubt it was the lye in the ash residue which satisfied her craving for something alkaline in a region of sweet water. At any rate, she came and licked and came again, until some inquisitive human who wanted to see whether Mary liked candy, placed a wintergreen Life Saver on her favorite licking spot. Mary came trotting up, now convinced that even Vic's wood chopping nearby meant no harm. She stuck out her tongue, licked her lips, bent her head, and her tongue brushed the round white disc of wintergreen. Like a shot, all Mary's wiry muscles responded. She leaped into the air, wheeling at the same time, and bounded away with that curious, stiff-legged, jack-in-the-box motion of the mule deer kind. We did not see her again.

From the viewpoint of science we had not, perhaps, contributed greatly to the sum total of man's knowledge, even though we had observed at first hand the ways in which elk and deer obtain the minerals which their systems crave. Yet I think that there is a moral in the Life-Saver story, and that is that the tastes of all are not alike. Thank goodness.

But the successful meeting with the Wapiti was to us but a foretaste of what was to come in our camera-hunting adventure. It whetted the appetite and urged us on to stalk more mountain goats on their lofty crags, to seek out the busy beaver and film his labors, to wander from the trail-side and seek out the many people of the wild that were there. Mayhap it did not prepare us for the picture and thrill of a lifetime that was to come in our encounter with the moose, which, you will find, only goes to prove that what one does is only a question of taste.

PACKING UP FOR THE TRIP

Cameras have to be stowed as carefully as possible against a rough journey

DISCUSSING THE DAY'S DOINGS

Around the camp fire we compared notes and laid plans to outwit the game

JOE CRANSTOUN JONES *has never walked in the fields and forests but there are few who love Nature more or know it with an understanding that is of the heart and soul. Through his deft fingers and twinkling scissors he catches the wild world in its many moods*

JOE JONES

Whose Scissors Serve the Genius That Is His

by

Ada Ramp Walden

Illustrated with Silhouettes by Joe, Himself

A PINE'S THANKSGIVING

"MASTER of all Creation, hear me in my thanksgiving! I thank Thee for the strength Thou gavest me when as a sapling I cracked the rocks that bound me! I thank Thee that though in earthly weakness I bent and mourned before the storms of the years, none of them has broken me!

"For it all I thank Thee, Master! For mine is the strength of rocks and storms that I have conquered, and the mountains speak to me of Thy power and the ocean breathes 'Eternity!'"

It was at the close of a summer afternoon spent in the beautiful woodland near his home, in Augusta, where a lordly pine occasionally rears its head above the surrounding forest that Joe Cranstoun Jones, famous youthful silhouettist, thus expressed the thought that filled his heart, in which the grandeur and beauty of Nature always find prompt response. Since early childhood, this receptiveness has expressed itself in practically everything he has produced, his magic fingers creating with exquisite precision, and awe-inspiring artistry, the pictures Nature has provided, all of which, except some few for which subjects have been supplied locally, are fruits of a remarkable visualization.

As yet, the young artist—he is eighteen now—has never traveled beyond the confines of Georgia, but the jungles of the tropics, the moss-draped cypresses of Florida, the western plains, and even the silent wastes of the Northland have been woven into masterpieces by the manipulation of his skilful scissors.

Particularly do birds feature in his creations, and he has a great love for all feathered songsters. His mother recalls that when he was but three or four years of age, he was given a book containing a reproduction, in miniature, of a chart portraying the various kinds of birds. The chart was a rather high-priced article, but he besought his mother to obtain it for him. All of Joe's hours were spent in bed then—he has never walked—but for many months, the chart was never out of his sight, but was kept in close proximity where he could study each bird to his heart's content. The novelty of toys, no matter how valuable, might wear off, but pictures of animals, birds, and scenes from Nature contained no novelty for him; the attraction always remained.

Always has Joe had pets

of various kinds, and on dogs does he specially place his affections. Unlike the average boy, the privilege of whistling to his dog and with it at his heels, dashing across the lawn, has never been his, yet no youngster has ever secured more genuine enjoyment from simple ownership of animals than he.

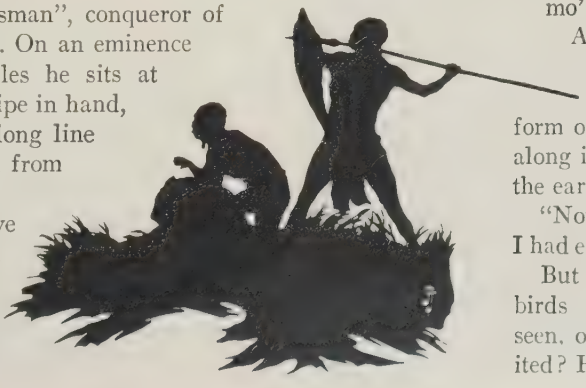
In a number of his silhouettes he has portrayed the graceful waterfowls—not one of which he has ever seen. In one, "The Egret", this stately bird stands poised on one leg in the placid waters, decked with rushes and water plants; from the canopy formed by interlacing branches, above, depend graceful vines indigenous to semi-tropical regions. No sign of life is visible, other than the fowl, lone "monarch of all he surveys". So realistic is the picture which has been wrought, that one imagines he hears the soft lapping of the waters, and the throaty "Jug-a-rum" of some hidden bull frog.

In this beautiful study of the lush forest Joe Jones has suggested a moment in the life of the jungle he has never seen. We are proud to have Joe as one of our members and to know that Nature Magazine has been a source of inspiration to him

Taking his views panoramically, one might say the next presented is a scene also of the south, but confined to a region north of the tropics—"A 'Coon Hunt". Treed, the raccoon, its body tense, is flattened on a limb projecting straight out from the trunk of the huge gum tree, its eyes on the two dogs and the huntsman. One of the dogs has planted its feet rigidly against the trunk of the tree, while it bays its victory; and the other, equally as interested, is for the moment nosing among the dried leaves beneath its feet; but no artist, with brush and living models as his subject, ever portrayed life itself more faithfully than it is expressed in these animals.

Now is ushered in a realistic scene of the silent, grim, north woods, "The Trapper". Giant trees, now leafless, that have stood the ravages of blizzards for hundreds of years, dot the picture; a trapper, fur clad, snow shod, is stooping to release from a trap a beautiful silver fox, its attitude one of helpless submissiveness to a higher order of animal.

The scene changes as the scissors clip and here is pictured "The Plainsman", conqueror of the West, the man who dares. On an eminence commanding a view for miles he sits at rest on his sturdy pony, his pipe in hand, viewing in the distance the long line of covered wagons coming in from the East.



World famed artists have laid their offering at the feet of this wonder-boy; but he avers the finest compliment that he has ever received came from an old darkey, of the ante bellum type and the simple clear nature.

Joe was spending a part of his vacation with an aunt in Dublin, Georgia, when the darkey drove by in his superannuated two-wheeled cart, slowly drawn by a patient ox. The aunt at once saw material for a silhouette, and the driver was signalled to stop. The young artist studied the picture a few moments, and the old man drove on. When next he drove by, some days thereafter, he was again stopped and shown the silhouette. Through old fashioned brass-rimmed spectacles, he studied the picture, absolutely true to life, the outfit passing over the rickety little bridge, just as it was first seen by the artist. At length, the old man chuckled with pronounced satisfaction, and said:

"Mr. Joe, I dunno how many o' dem Yankees on dare way to Flurridy, has tuck my picture, but dey aint none ob 'em look lack me as much as dis'n. Hones'ly, hit's mo' lack me dan I is myself!"

And then, after searching it more intently, and noting an addition to the picture in the form of a "flop-eared" hound running along in advance of the ox, its nose to the earth, he asked suddenly:

"Now, Mr. Joe, how come you know I had er houn' jes' lak dat'n at home?"

But how does Joe know of the birds and animals he has never seen, of the forests he has never visited? His is the artist's soul, creating.

Mr. Reinhard, one of our younger entomologists, has a distinct knack for telling the story of interesting insects, as this story well proves

PEMPHREDON IS A SMALL WASP WITH A NAPOLEONIC HEAD

It is the black hunter of aphids who makes its home in my friendly beech stump

PEMPHREDON *and her* ENEMIES

What the Old Beech Stump Entertains

by Edward G. Reinhard

THE remnant of a tree that has been broken by the storm is more interesting to me than the leaf-crowned monarch. Some have their favorite trees under which they dream and rest; I have my favorite stumps beside which I watch and meditate. A tree is too vast, it has parts intimate and parts remote; it is incomprehensible and therefore strange. A stump is more friendly because it approximates man's size, every bit of it is tangible and observable.

DR. C. E. CUMMINGS

I HAVE A SCIENTIFIC STUMP

It is the remnant of a beech and offers its hospitality to a host of interesting insects

I have a poetic stump—the remnant of a maple. It is as picturesque and as venerable as a ruined castle. On its walls fungus growths make little ledges and balconies. There is a knot-hole postern and cortical parapets. Silvery plaques of lichen adorn the sides. You would not think it at all unusual if instead of a neurasthenic chipmunk there arose from the turrets of the stump a little elf who politely bowed you "Good day".

I have also a scientific stump—the remnant of a beech. It is old, decrepit, decaying and riddled with cavities. The beech is an aristocrat among trees as the greyhound is among animals. Both possess grace, a slim figure, and a coat that is always smooth and clean. Even in death the beech seems to crumble with dignity. This stump offers its hospitality to a host of interesting insects. It even has a zoning system. There are separate communities; under the bark, in the brashy wood, in the hard wood,—and each group is distinctive. Beetle-grubs are usually the pioneers. They channel the

stump with their labyrinths.

When the adults leave these galleries, round little windows are made for emergence. Into these other insects crawl and assert their right of possession. Such corridors eventually give lodging to spiders, ants, gnats, and wasps. Of the wasps there are some who pack the galleries with moths, some who use flies, some who capture leaf hoppers and some who hunt aphids. The aphid hunters are the most numerous. They are the Pemphredon wasps, assiduous collectors of those destructive hemiptera, the plant lice.

Pemphredon concolor is a small wasp with a Napoleonic head. Her big, broad, wedge-shaped head fits on a robust thorax which, in turn, has a bulb-like abdomen trailing from it by a thin pedicel. The head is broader than either thorax or abdomen. Notwithstanding her wise-looking head Pemphredon is sadly outwitted in the struggle for existence. There are at least three different insects who despoil her nest and destroy her children without opposition. She wears a cloak of mourning,—a "tout ensemble" of black, with smoky wings,—but she is as polished and bright as the gold dust twins.

J. A. BROSNAN, S. J.
FEMALE PERITHOUS
One of the band of black and tan uhlans

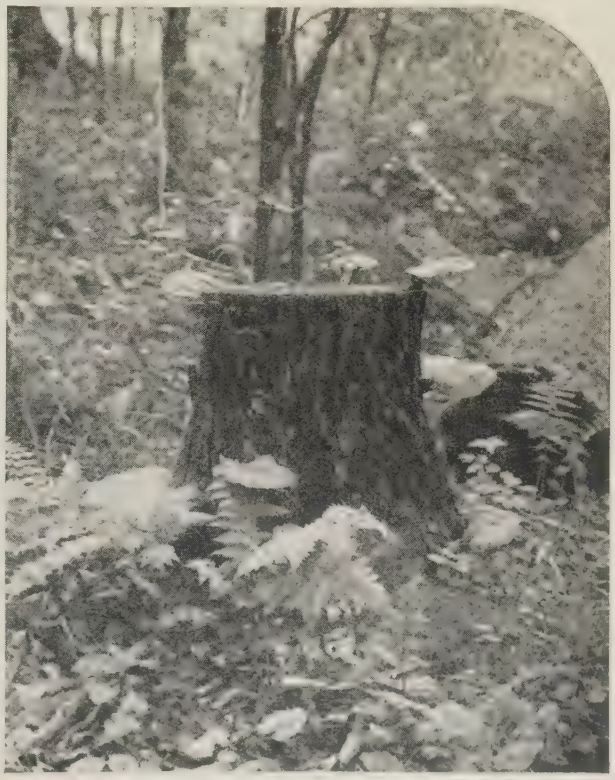
It is in the sound and solid parts of the beech stump that Pemphredon nests are found. They are usually remodeled from the galleries tunneled by the grub of the darkling beetle, *Alobates pennsylvanica.*

The wood of the beech is comparatively soft and lends itself nicely to the carving tools of the wood-boring insects. The nesting-chambers of Pemphredon are neatly eroded. The corridors and chambers are all of uniform diameter. In the more generalized plan there is the central channel of the nest, the egg-chambers coming off obliquely at regular intervals and from alternate, not opposite, points. There is not, however, any precise geometrical arrangement.

Externally, all that is visible of Pemphredon's dwelling is a small, inconspicuous round hole in the bark, scarcely to be noticed unless one saw a wasp shoot herself into it. How wonderful it would be if one could shrink to insect dimensions and follow after her. She may presently reappear in the vestibule and frame her expressionless face in the opening. The movements of the inquisitive naturalist beyond her door are disturbing. But if he remains quiet she will crawl out and take wing to the tree tops, her hunting ground. To the hickory trees she goes to capture one of the thousands of plump, purple aphids who sip and sup their slothful lives away on the swaying branches. *Longistigma caryae* these aphids are called by our taxonomists. To the hickory they are "pests"; to the wasp, "prey"; and to the wasp's children, "pap". Once a wasp bags an aphid, its bibulous career is over. She collars it with her mandibles and makes off with the aphid hanging limply from her jaws, even as a cat bears a mouse away between her teeth.

One after another the bloated plant-lice are rounded up and laid away in cells already prepared in the beech stump. Into each chamber will be pressed eight, ten or even eighteen aphids. The *raison d'être* of all this hunting and hoarding is found in the bottom of each cell. It is a long white egg which was glued to the first captured aphid which lies upon the floor. This egg is the casket from which will come a legless, wingless, eyeless larva that will feed upon the hoard of aphids and ultimately transform into a brisk, black wasp like its mother.

Six or seven days are enough for the hungry larva of Pemphredon to consume its purple meat and drink its purple wine, for the hickory-aphids are appetizing food and drink of the best quality. After a week of continuous feeding the glutton commences its career as a craftsman. Its mother was a worker in wood. The larva works in textiles. Without any training, the week-old infant will produce a unique and meritorious work.



DR. C. E. CUMMINGS

AND I HAVE A POETIC STUMP
It is the remnant of a maple, as picturesque and as venerable as a ruined castle

The cocoon which the larva constructs is a U-shaped pouch with a flat cover. The bag itself is composed of glazed silk, stained yellow like oiled paper. The cover is parchment-like, a circular disk with a projecting rim below, which fits and is fastened into the mouth of the bag.

There is no attempt at hardening the walls of the cocoon but the circular lid is strong and tough. Intruders, should they come, would be expected to enter the cell from above through the main channel, not through the thick fastness of the wood which surrounds the cocoon everywhere but at the top. Close the cocoon with a stout door and the occupant will be safe? Not so. It is the unexpected manoeuver which succeeds best. Pemphredon has several enemies. Some would be baffled by the parchment lid, but there is one who can penetrate the larva's sanctum without so much as even tampering with the door. But, if unmolested, the Pemphredon larva will sink into a deep slumber so that internal forces can get it in shape for the grand rebirth.

J. A. BROSNAN, S. J.

PURPLE HICKORY APHID

Source of delectable food for the young of Pemphredon

We draw the veil over the sleeping babe. When the transformation is consummated, the new imago will announce her birth by cutting a circular exit through the parchment lid. Then she will emerge in the glory of her melanic coat of mail, and woe to the aphids, for the black Amazons are coming!

Through every drama of insect life there invariably stalks the spirit of tragedy. Our newspapers are not more given over to tales of banditry and murder than are the notes of an entomologist who reports news of Nature's minute multitudes. Chicago is a city of peace compared with such an insect settlement as inhabited the crowded beech stump where the Pemphredons had their abode.

During the latter part of May a cult of dipterous erotics made the stump their rendezvous. They were little midge-like flies of a dusky complexion, dwarfed and hunch-backed. In couples they danced around the stump like worshippers of Pan around the pillared sacrifice. The sturdier female, leading a pair, would circle over in front of a wasp's nest entrance. Her swain, a weak-hearted drone, absconds at the last moment for safer quarters, and the lady alone would invade the wasp's den. But if the dreadful stinger were within, she would judiciously retire a little distance to await the wasp's departure.

The first little hump-backed fly I noticed was hovering inquisitively about the stump one bright morning. She flew up to the entrance to one of Pemphredon's tunnels. Just as the prying wight was about to enter, a sturdy black face appeared to block the passage. No hope of forcing that blockade. So the fly took up a station on the stump about an inch above the tunnel, and waited motionless. After a while Pemphredon emerged and flew off, leaving her home unguarded. The fly sneaked into the nest and remained for little more than a minute. I nabbed her as she made a hasty exit.

Then with a knife I cut into the wood until the most recent nesting chamber was revealed. It was only partially stored as yet with ten plump aphids. There was no sign of Pemphredon's egg, but on one of the larger aphids, attached to the underside near the hind end of the body, were six tiny nits, white, cylindrical, moist, evidently the eggs left by the uninvited visitor. What a surprise for Pemphredon to return to find two sets of triplets swarming over the nursery floor.

J. A. BROSNAN, S. J.

LARVA OF PEMPHREDON IN ITS CELL

Fastened to its body are the egg and devouring grub of the parasitic Perithous

The undesirable alien which thus appropriates a stranger's bed and board for her unborn offspring is a small brown phantom, christened by science with the fine sounding name of *Aphiochaeta longifrons*. Her relatives of the Phorid family generally abide as maggots in decaying animal or vegetable matter, but *longifrons*, as the name indicates, is a literal "high-brow". She risks death to install her brood in a luxurious apartment. On previous occasions I had reared this fly from the cells of Pemphredon, and now that I discovered her at her

nefarious actions, circumstantial evidence convicts her as an ambitious and unscrupulous wench.

In the autumn a band of black and tan uhlans descended upon the citadel. They were tall and lean, each warrior armed with a long lance dangling behind in the wake. Ichneumons or "long-sting" wasps they are called, and this particular contingent was enrolled under the alliterative name of *Perithous pleuralis*.

M. G. SCHNECKENBURGER

A SMALL BROWN PHANTOM

This hump-backed fly has been christened by science with the name Aphiochaeta longifrons

The female Perithous, for she alone is a warrior, has a length of about a centimeter, and the slender lance or ovipositor which projects in the rear is equally as long as the creature which carries it. The instrument is slender and flexible as a horsehair, but it does not consist of a single piece. When examined, the thin hair readily splits up into three parts: a central portion, the lance proper, exceedingly fine and sharp; and two heavier side pieces that are grooved lengthwise to fit around it as a scabbard.

One afternoon early in October I noticed several ichneumons taking reconnaissance of the cut surface of the stump where I had recently been at work digging out some cells of the black aphid-hunter. With their lash-like antennae they were tapping and feeling the surface, getting cognition no doubt of their prey buried in the wood. Like expert burglars they seemed sensing the combination of a safe with delicate finger-tips.

Shortly one after another rose up on its six long legs, swung aloft its skinny abdomen, unsheathed its caudal instrument and brought it into position to penetrate the wood. The lance is fixed to point vertically downward, its sharp tip pricks the wood between the spreading framework of the legs. Then slowly, with effort, the lever-arm of the long abdomen pushes and presses the frail drill into the solid wood. The side-pieces or sheathes take no part in the act of penetration.

It was amazing to see the thin, hair-like instrument pass slowly into the wood under the pressure of the insect's abdomen. The ovipositor enters up to the hilt, its entire length. It is a trick worthy of a magician.

The purpose of this drilling and probing by the female ichneumons was, without doubt, to insert their eggs in the wasp's nest. I imagined, however, that an egg which could pass down the channel of a thin, hair-like ovipositor must be an exceedingly minute little germ. The curious, relatively large eggs which I did find when I opened the wasp's nests were a complete surprise.

The egg of Perithous is a white object, shaped like a thin crescent. It is a sort of elongated tube with each end drawn out into a narrow horn, one longer than the other. The main portion of the egg is opaque while the horns are transparent. The total length is about 2.5 or 3 millimeters.

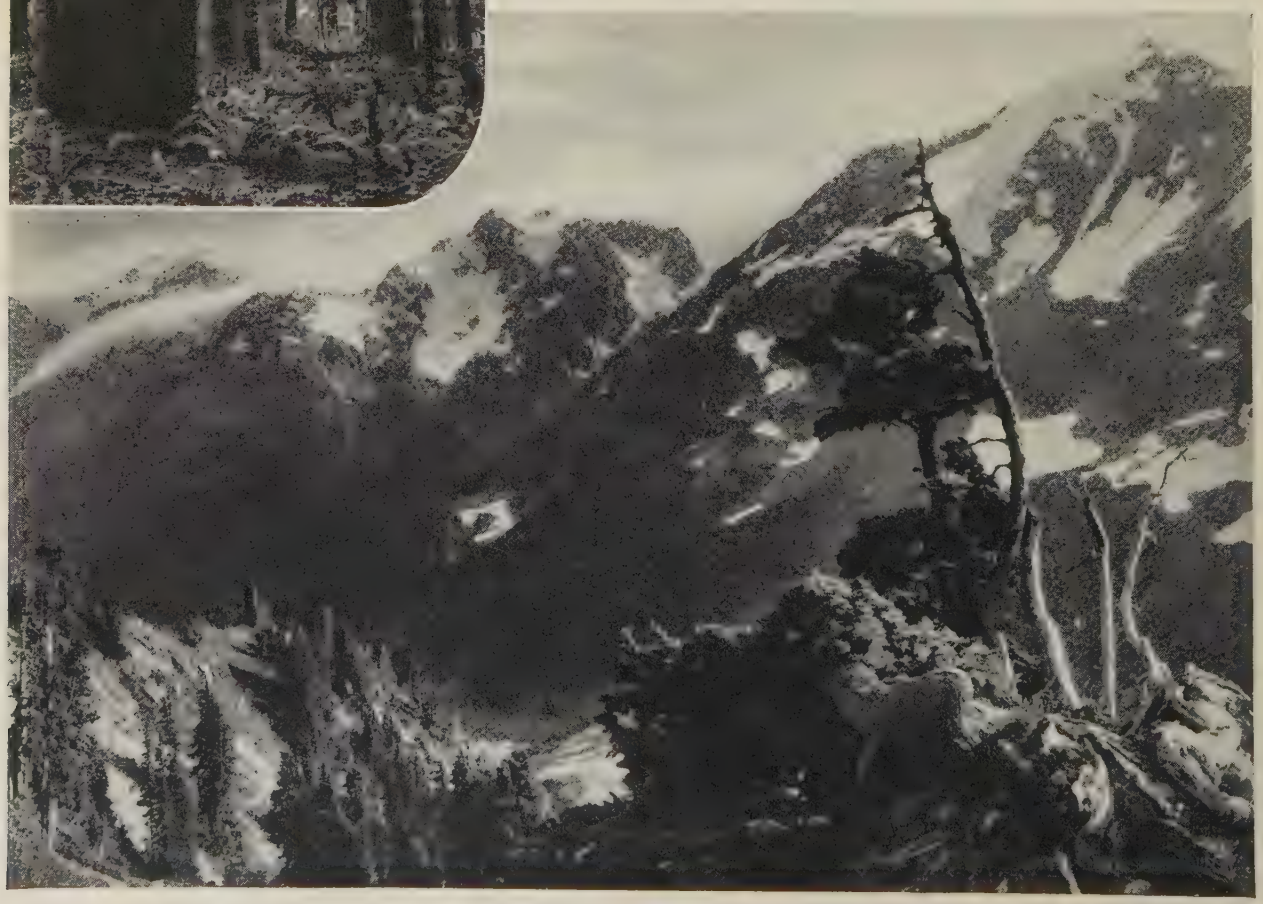
The egg is certainly thicker than the tube out of which it must issue. Can a camel pass through the eye of a needle? Not unless the camel is very elastic or compressible. An ordinary egg would be ruptured under pressure. But these eggs possess an empty annex at each end. When passing down the ovipositor, the contents of the horned egg can spread out into the vacant ends. Thus it may be compressed without injury. When liberated from the ovipositor, the egg contents condense and swell to their former size, leaving the ends empty. That is possibly the solution of the paradox, as well as an explanation of the unusual shape.

Sometimes I found these curious eggs stuck loosely to the body of a wasp larva, but more often they were fixed by one point to the walls of the cell. They never occurred in a cell filled with aphids, or one in which the larva was still feeding. Without exception, I always discovered them in chambers containing the full-fed larva, either previous to its encasement or after it was enclosed by its cocoon. Most vandals seek mainly the wasp's store of provisions, and destroy the wasp larva only as a necessary means to obtain undisputed control. Perithous, however, practises real parasitism. The full grown Pemphredon grub is the living host whose body and blood form the sole feast of the inquiline.

A day after the egg is laid, a swelling can be noticed at the base of the short horn where the lesser prolongation begins, and a day or two later the embryo crawls partly out of the shell to begin feeding. Slowly the juices of the wasp larva filter through into the gullet of the parasite.

It sets one musing and questioning to behold the plump grub being drained off into the stomach of the suckling destroyer. The contents of one container are emptied into another which is no more perfect to deserve or to possess them. Time and energy and food have been expended to create a wasp larva. Looking at it we say that it is good. Then slowly, the larva that took such efforts to develop, undergoes dissolution at the lips and enzymes of another. The Pemphredon is transmitted into a Perithous; but what has been gained? Where is the advance? Is it only the manifestation of Change, that necessary, universal, dominating law? Perhaps so. Sometimes there is evolution, sometimes devolution, but always change. Anabolism and catabolism are constantly repeated. At each swing of the pendulum another life is measured and ticks away.

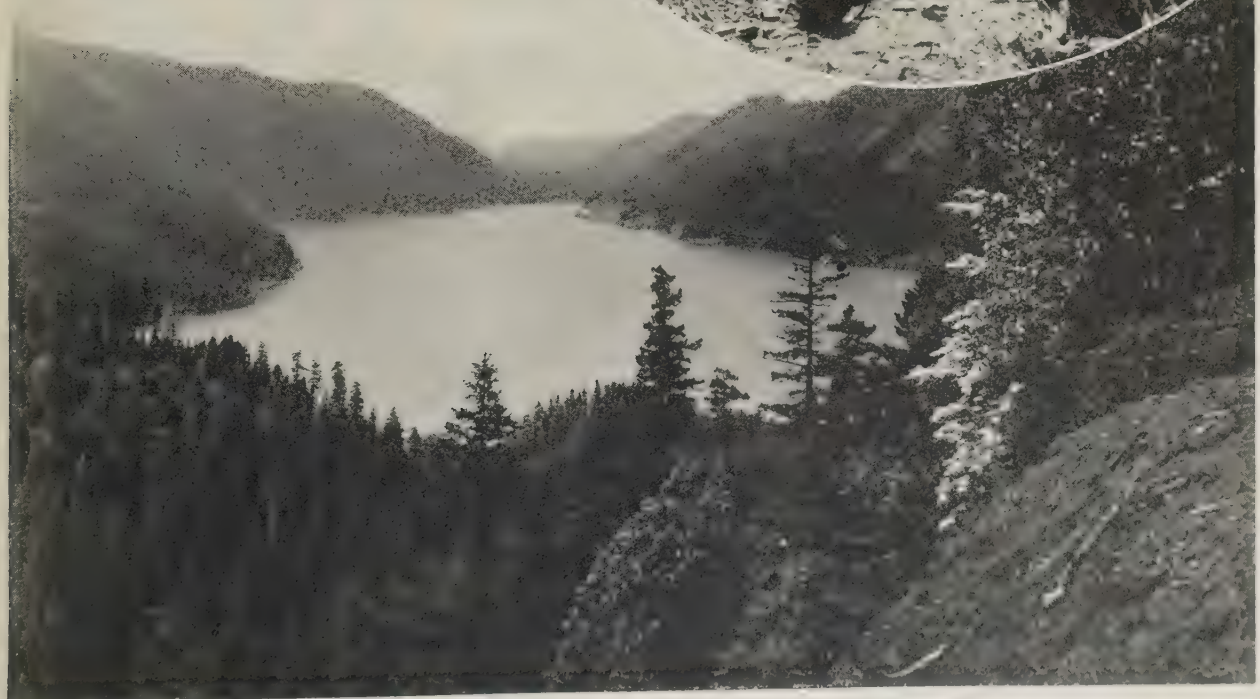
OUT *where the Olympic Mountains rear their giant, snow-strewn bulk is a wonderland for the lover of the out-of-doors. It is a land unspoiled, as the beautiful pictures by Asahel Curtis on these two pages amply testify. Above is a view of the Olympics from Hood's "Canal". At the left is given an idea of the giant trees and forest vegetation of the timber stands of the Peninsula. Below we see Mounts Queets, Seattle and Christy from the slope of Mount Barnes, while in the foreground grows a mountain hemlock twisted by the winds which sweep the heights and have left this startling impress of their power.*



In the picture above Mr. Curtis has taken a remarkable photograph, showing a startled herd of Roosevelt Elk at a water hole. The picture at the right is alluring to him who loves to follow the open trail among the mountains. And below is the more quiet and less rugged beauty of beautiful Lake Crescent in the heart of the Olympics.

While the Peninsula country is wild and rugged it contains some fine resorts to care for tourists who are now visiting this land.

PHOTOGRAPHS BY COURTESY OF THE NORTHERN PACIFIC RAILWAY



The two pictures on this page tell a story of interest and importance in connection with the cutting over and reforestation of our forest areas. Above are men employed by the Union Lumber Company at Fort Bragg, California, replanting young redwood trees on cut-over land. This is a policy carried out by several of the redwood companies. Below we see a logging operation under way and can get an idea of the devastation left in its wake. Let this land be burned over two or three times, killing all natural new growth, and we will have an area that can be put to work again only by reforestation.

Denuded Land Demands Trees

Ninety Million Acres of Loafing Forest Land Must Be Replanted

by Richard W. Westwood

If one thousand men of the many thousands employed by the Ford Motor Company stood around all day and did nothing their places would either be filled with workers or the company would inevitably be in sore straits.

If the outfielders on a baseball team decided to stop chasing fly balls they would soon be replaced or the team would drop to the cellar.

If one regiment of an attacking division decided to quit fighting reserves would have to be thrown in or the offensive would be lost.

If ninety million acres of land which once grew forest grow nothing but waste and the remaining forests are cut four times as fast as they are being replaced—!

Well, here we have four simple situations. The conclusions to the first three are stated, self-evident as they may be. It requires little thought to draw the conclusion to the fourth situation.

But there is a difference. The first three "ifs" are improbable situations. The fourth is not. Why not? Because the United States has about four hundred and seventy million acres chiefly, and, for the most part, exclusively suited for growing trees. It is wood or nothing, and how we make this acreage work is the answer to the extent and cost of our supply of wood.

We cannot do without wood. One of the most important keystones in our economic structure is of wood. It has created in large part our present high living standards. Its lack would endanger them. To date we have cut nearly three-fourths of our timber supply and our best and most accessible timber is gone. Some of this land has gone back to work, either at producing forest or something else. The rest,—close to one hundred million acres,—is doing nothing. It will never go to work at anything unless we plant trees on it.

And what is being done? The American Tree Association investigated and found evidence that about ninety million trees are being planted yearly. It sounds like a lot of trees, but it is only enough to reforest ninety thousand acres. It would take at least five hundred years, at this rate, to put the loafing acres back to work. In the meantime cutting goes on and fires continue to burn.

A FEW FACTS

The United States has over ninety million acres of forest land demanding replanting.

At our present rate it will take nearly five hundred years to reforest all our loafing acres.

On the old and new National Forest lands about two million and one-half acres require reforestation.

Thousands of acres are being bought each year by the government with no provision for reforesting them.

New York State plants twice as many acres every year as the Federal Government.

Japan plants ten times as much annually to trees as the United States Government.

Great Britain plants annually twice as many acres as the U. S. Government.

Within our present and projected National Forests there are two and one-half million acres that must be artificially reforested. In fact some of the States and some private owners are putting lands back to work faster, but not fast enough. New York and Pennsylvania are turning out more young trees for forest planting than all the Forest Service nurseries. Several states have passed tax laws lifting burdens from owners of lands who put them back to work.

Principally the Forest Service has lacked funds, and it is only recently that laws have made possible cooperation with States in producing young trees and getting them into the ground. Still the means are inadequate. Appropriations made are mere shadowy gestures when compared with other items of not undebatable public need.

More and more lands are being added to the Federal holdings, and the major character of them makes reforestation more and more important. Much of this acreage is now unproductive. It must be made to serve. It is needed not only for timber but to prevent erosion, regulate flow of streams, check floods and safe-guard power developments.

"On the present National Forests, alone," writes Charles Lathrop Pack in the February *Review of Reviews,* "there are approximately a million acres of land that can only be made productive by artificial reforestation—that is, by planting. At least one million acres more are likely to be added. How rapidly is the Government replanting this land? During the year 1926, eleven thousand five hundred and fifty-two acres were planted. In 1927, twelve thousand six hundred and fifteen acres. In other words, these acres will not be reforested, at the present rate, for about one hundred years. If the contemplated additions are made it will take nearly two hundred."

The answer is more money for more planting. The job must be started with a vengeance on the land the people own and want working for them. You have to train an artisan that he may earn; you must reforest waste lands that they may grow. Let us cease deluding ourselves. The problem is clear, the knowledge is adequate to solve it but straw still refuses to be fashioned into bricks.

STEINER

USEFUL AND BEAUTIFUL

When this snow has ceased to be the envy of artists, it flows down valleys to turn wheels and water crops

SCIENCE SURVEYS THE SNOWS

Helping Out Industry and the Farmer Amid Sierra Drifts

by Robert Stewart

Photographs by the Author

An adequate snow cover in the high mountains is of vital importance in a semi-arid region, not only to agriculture, but also to industry, for it furnishes the water supply. A knowledge of the quantity and quality of this snow cover gives valuable information upon which agricultural and industrial plans may be based.

Realizing these truths, Dr. J. E. Church, Professor of Classics of the University of Nevada, and an ardent mountaineer, in 1905 conceived the idea that a meteorological observatory should be established on Mt. Rose to get records of temperature, wind, snow and rainfall throughout the winter. Mt. Rose is one of the highest peaks of the Lake Tahoe region and is 10,800 feet high. The Weather Bureau in San Francisco furnished him the necessary equipment for establishing such a meteorological station. It came into being in June, 1905, and its importance was at once realized. New facts of value to the world of the lowlands leaped forth from the records. It was early discovered, for example, that those forests at high elevations in the mountains exert a tremendous influence on the retention of the snow cover until late in the season.

Dr. Church, not satisfied with this, however, soon tried to obtain sufficient data from his meteorological station on Mt. Rose so as to forecast the spring and summer flow of the mountain streams, a knowledge of which would be of incalculable value to farmers in planning their crop programs on the irrigated farms in the valley and power companies in making plans for power con-

sumption. He found that for this purpose data from more than one point in a drainage basin were necessary and the record of the amount of snowfall from storm to storm alone was not sufficient, but that the actual water content of the snow had to be determined. Through his efforts additional measuring stations were established at key points in the High Sierra for determining the quantity and quality of the snow cover of the drainage basin.

A snow sampler to determine water content was devised by Dr. Church. It can be driven to a depth of twenty feet or more and has penetrated the deepest snow yet found in the Sierra. It has a specially-adapted toothed cutter which makes it possible to cut through thin crusts of ice and even to penetrate the upper layers of congealed snow on glaciers. It has a dial attached which records the density of the snow and thus gives data for calculating the water content by weight. In this way the depth and water content are ascertained at one sampling, and the basic principal of the snow survey, which is the estimation of the water content of the snow cover at the beginning of the spring run-off, is satisfied.

Two fundamental facts are the basis for the accuracy of the snow survey: first, the approximate uniformity of the snow cover over wide areas, and second, the intimate relationship in the Sierra Nevada between the winter snowfall and the spring-summer flow of water in the mountain streams. There are only two disturbing factors of major importance: the premature melting of the snow cover at the lower levels, and the deficiency in normal rainfall during the April-July period. The effect of the premature melting of the snow can be measured by means of low level courses at the time of the annual snow survey about March 1 of each year. The probability of a deficiency in spring rainfall can be determined approximately by May 1 and its effect discounted.

The snow falls more or less uniformly over wide areas in mountain regions. A determination of the snow depth and average water content at certain key points gives data from which the flow of the stream may be forecast. For accuracy usually from twenty to forty such determinations are made at each station. Each basin is laid out in zones where variation in the snow cover with the altitude is determined. The collected data, together with a knowledge of the relative area of the snow cover at each altitude, give information whereby the effect of premature melting of snow at the lower altitude or the reliability of the forecast of the stream flow during summer may be discounted. Measurements are made about February 1, March 1 and April 1 of each year. This information together with that obtained by an allowance based on the relative normalcy of the spring rainfall, which can be estimated by May 15, gives the necessary data for forecasting the flow of the streams from the drainage basin during the succeeding ten weeks or until the end of July, after which the winter snow cover has little influence.

The snow survey has been in active use during the past eighteen years. During that time sixty forecasts of the probable summer flow from six drainage basins have been made. Of this number thirty-three forecasts were within ten per cent of the actual stream

ON SIERRA SLOPES

Dr. Church's snow sampler will determine the water content of this mantle, and ascertain the spring run-off

flow as measured later, while sixteen were within twenty per cent. The remaining eleven were within only thirty per cent and these forecasts were based on insufficient data as only information from crest snow stations was available. Some of the forecasts were within only five per cent of the actual measured flow of the streams. An accuracy of ten per cent is regarded as highly satisfactory.

The collection of the necessary data during the winter season at such high elevations is no simple matter. It was only men of robust health and sturdy endurance who could withstand the hardship encountered in such an investigation. Stories told of their experiences by Dr. Church and his assistants remind one of the experience of the arctic explorers. On one such trip to the top of Mt. Rose, Professor Johnson and Dr. Rudolph were forced to spend the night in a pit dug in the snow so that they might be protected from the gale while the temperature was 5° Fahr. below zero. The next day they fought their way to the top of Mt. Rose only to be forced to retreat to save being frozen to death, so withering was the arctic gale. They were unable to collect the necessary data and three days later Dr. Church ascended Mt. Rose only to lose himself in the impenetrable fog which enveloped everything, and he wandered into the wildest portions of the mountain before he finally emerged from the storm safely. Many other parties passed through similar dangerous experiences.

OFF TO THEIR STATIONS

No life of ease, this. The snow survey movement has spread to the East, Canada, Switzerland and Greenland

Through the active co-operation of the states of Nevada, California, Utah, the city of Los Angeles, and various power companies and irrigation districts the snow survey has been gradually extended over the Sierra Nevada and the Great Basin. The eastern slope of the Sierra Nevada, including the Tahoe, Truckee, Carson, Walker, Mono and Owens Basins, have been fully organized and measurements of snow are now made annually. On the western slope of the Sierra, the South Yuba Basin is fully organized and the Mokelumne Basin is partly organized. The Middle Yuba and the Klamath regions in Oregon are also partly organized for snow measurement. The work is slowly being established in the Great Basin of Utah and has been partly developed on the Humboldt River watershed. Complete systems have been organized for the entire Colorado River Basin, the development of which is so vital to the very life of the great Southwest and which just now occupies the attention of Congress in the construction of the Boulder Dam. A similar system has been organized for the Columbia River Basin, whose development is one of the big things of the near future.

The Nevada system of snow surveying has been adopted also by the Washington Water Company, Spokane, Washington, the Shawinigan Power Company, Montreal, Canada, the Black River Control District, Watertown, New York. The system is being tried out by the Canadian Meteorological Service in the Bow Basin; by the United States Reclamation Service at American Falls, Idaho, and on the Upper Snake River Basin; by the Stavanger Power Company in Norway and, also, by the Zurich Glacier Commission in Glacier Study in the Alps.

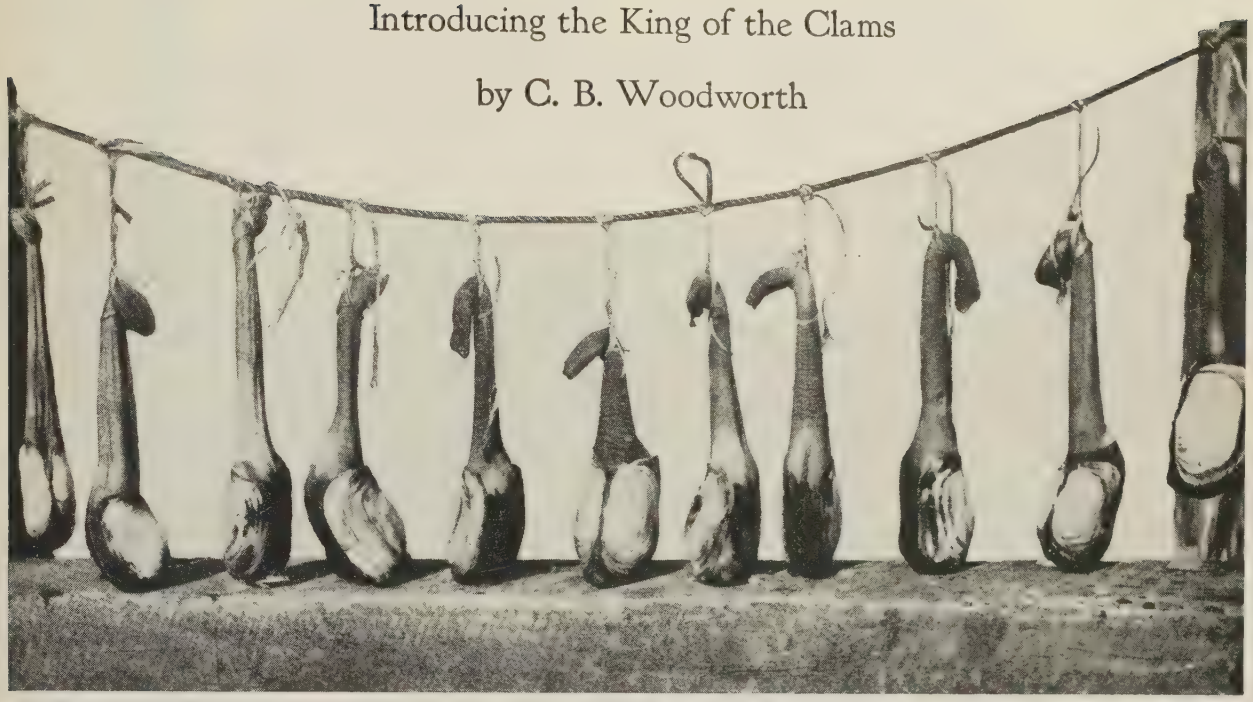
Last year Dr. Church was asked by his Alma Mater to join the University of Michigan Greenland Expedition and to establish his system of snow survey in that icebound distant region. He spent the last winter in Greenland where he selected vantage points to establish stations in this land of ice and snow.

Science is the arch intruder, and, in forcing its way into the field of the snow survey, it has perhaps appeared presumptuous, but the early results have justified its creation. The infant prodigy is growing, become more exacting and accurate—the accompaniment of age. Industry and agriculture have found a fine new servant to measure floods and calculate water-power still frozen.

GOEDUCKS

Introducing the King of the Clams

by C. B. Woodworth



ELEVEN "LITTLE" GOEDUCKS, ALL IN A ROW
Imagine a clam three feet or more from one end of its shell to the tip of its siphon and still as tender as lamb

ONE who has never gone out at the peek of dawn to catch the early day, and worked hard to secure his bag of goeducks, can never appreciate the supreme delicacy of the flesh of this truly giant clam.

We all know of clams, and no doubt have seen them, but think of one that may weigh over six pounds and that stretches in length from one end of the shell to the end of the siphon or twin funnels to as much as three feet and more! The shell proper, compared to the rest of the animal, is small and has a much outgrown look, for the valves constituting it do not meet at their open margins due to the bulk of the body. The exposed flesh is covered with a coarse brown skin, that peels off as readily as that of a sausage, revealing the tender flesh beneath. Properly prepared, it is as toothsome as it looks.

The siphon, neck, or twin funnel, as you will, is the making of most wonderful chowder or soup, while the "breast of the bird", in the parlance of the diggers, as the hunters after these clams are most appropriately called, the meat of the body, dressed, looks not unlike a roll of butter. Sliced and fried in cracker crumbs and butter, it fairly melts in your mouth. The tender flesh has a sweetish taste all its own, and is so toothsome that you literally have to hold on to your tongue when eating goeduck to keep from swallowing it along with a plate of the delicacy.

But 'tis no mean task to make your catch; it takes strong arms and a great deal of determination, for this monster bivalve lies buried in the sand of quiet bays to a depth of as much as three feet in the case of the larger specimens.

The author of this article is a Portland, Oregon, business man with a side-line of interest in Nature generally and in clams specifically. His article assembles data about these unusual big fellows who have not been the subject of much printed notice. We are delighted to have Mr. Woodworth introduce this "ace of clams" to our readers.

The digging is attended with most success when two or three of those bivalve-bent work together, thus getting the quarry, or bird, as those who love it best are wont to call it. On a purely sand beach it is an almost hopeless task for the ordinary man to dig one, as the sand will slide and cave faster than he can take it out. If no help is available the cylinder method can be used. The cylinder is made of galvanized iron about two and one-half feet long and eight inches in diameter with handles on the upper edge. This is set over the exposed neck and by twisting the handles it is sunk a short distance, the sand is then removed with a saucer, clam shell or any suitable dipping utensil, or even by hand. As the sand is removed the cylinder sinks down its full length. The advantage is obvious—the only sand removed is that from the interior of the cylinder. It is a bit messy, but that is unimportant. Some diggers run a cord three or four feet long through the neck, others run a stick through the neck. Neither is necessary as the neck runs straight up from its resting place.

Goeducks can only be found at very low tide. The best month is March. At this time the necks are exposed four or five inches above the beach from which streams of water are being constantly spurted It is an interesting sight to look up and down the beach and watch these miniature geysers. The time for digging is very limited, about two hours at the most. It requires fast work and quick determination.

The neck is a twined tube, one tube being the incurrent siphon through which the respiratory food-bearing stream of water enters, the other through which is expired the water from which the small organisms and organic detritus on which the animal feeds have been strained. The greenish appearance of the stomach contents leads to the supposition that they largely feed on sea-grass. Unlike many clams of lesser degree, the neck can not be retracted within the shell for protection though it may be drawn below the surface of the sand when disturbed.

The name is variously spelled: goeduck, gooeduck, geeduck and gouieduck. Very probably it is the given Indian name. One is told that the "oe" in goeduck is pronounced like the "oi" in oil, and it tempts you to add in fun, "Yes, and the 'h' is silent like in apple".

The goeduck finds its home principally in various portions of Puget Sound, Washington, where it is still to be found, however in greatly diminishing numbers. It has been so hunted and become so scarce that the State Legislature imposed a closed season covering a two-year period in an endeavor to aid the recovering of the species. Southward the species ranges as far as San Diego, though only a recent survey developed them at Morro Bay, within the confines of that state.

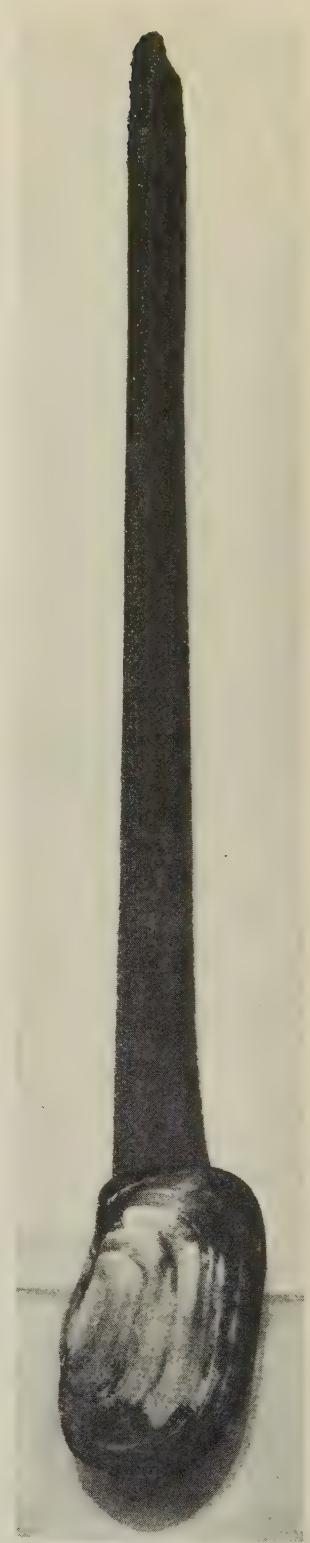
He who has never hunted goeduck has missed a lot of healthy, strenuous exercise, and failed of tasting one of Nature's finest sea-food dainties with the best of appetites. This healthy urge to eat is well stimulated by the exertions of a goeduck hunt. When I was first invited to participate in one I felt much as though I had been invited to go on a sniping expedition. I was told that early rising was essential, but whatever the proceedings of the hunt were to be I was determined to go through with it and learn the game.

Rise early we did and were soon on the beach with its many small fountains spurting joyously. Grabbing a shovel, I started to dig, but only a horse clam rewarded my labors. Then they introduced me to the cylinder method, and the excavation that resulted was so deep that I could not reach my prey with my arm. A tall friend in the party came to the rescue and out came the first "bird". It was a four and one-half pounder and a fine catch.

Two necks, spouting near one another, were selected for the next attack and we all dug valiantly in a circular trench about six feet in diameter. Finally, down deep enough, we all jumped in, captured our goeduck and were out before the sand had caved in to cover them. The hunt went on until we had an average of three and one-half pounds each. This was enough for our epicurean needs and we left the rest spouting away on their beach and carried our healthy appetites homeward where they were deftly and completely satisfied by our cook, who knew well the way in which a goeduck should be treated in the kitchen. Sated for the moment with the feast, we gave voice to a stuffed but unanimous hope that the goeduck would be well protected.

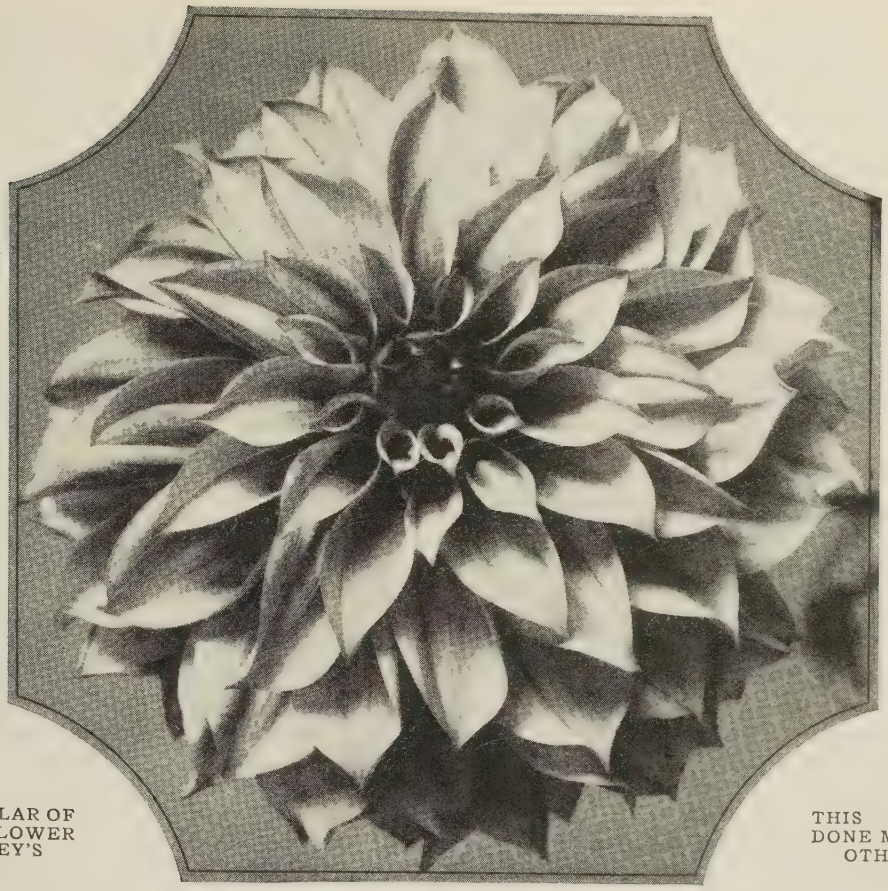
(*Left*) POSED

Since the name suggests duck the clam is often posed to resemble one when photographed. Scientifically it is:—Panope generosa *Gould*



A LONG FELLOW

An idea of the proportion of shell to siphon



THE MOST POPULAR OF A POPULAR FLOWER GROUP—JERSEY'S BEAUTY

THIS VARIETY HAS DONE MORE THAN ANY OTHER FOR THE DAHLIA

THE HERITAGE *of the* AZTECS

The Dahlia—Mexico's Contribution to the Modern Garden

by Derrill W. Hart

It was in 1570 that Philip the Second of Spain sent Francisco Hernandez to Mexico to compile an official report of the tree and plant life of New Spain. He sent seeds to the Director of the Royal Botanic Gardens at Madrid, who, in turn, disseminated the dahlia throughout Europe. Hernandez found the dahlia, not as a wild flower, but in the cultivated gardens of the Aztecs. When first disseminated throughout Europe the Aztec names were used, Acocotli and Cocoxalochitl. The present name dahlia was given in honor of Andreas Dahl, a pupil of the great botanist Linnaeus. The dahlia had started a round of controversy in European botanical circles, and it was Dahl's fervent interest in the flower that gave his name to it. This was in the early eighteenth century. These dahlias, known botanically as *Dahlia variabilis,* were what we now would call poor specimens of a loosely-petaled, semi-double character. From them the European growers developed what is now known as the show type and it was this type that had a run of popularity in Continental Europe and England in the early nineteenth century, particularly in England. Even then as now, it was the spectacular colors of the dahlia that impressed flower lovers.

Due to the stiff form of this show type, the dahlia ran its course of popularity in less than half a century, and it was not until the early nineteenth century that a new type, *Dahlia juarezii,* was discovered near Juarez, Mexico, and the dahlia took on new life and resumed its march to popularity in the floricultural world. A tuber of *Dahlia juarezii* was sent to Holland. It was crossed with the older and better known type, and it was from these crosses that the dahlia was brought back to American gardens.

The first spectacular modern dahlias were grown on the Pacific Coast, where the dahlia finds an ideal environment, and it was from the California growers that the Atlantic seaboard horticulturists got the first monster flowers which brought the dahlia from obscurity, during the last quarter of a century, to the position of one of the leaders in the floricultural world. There is not a state in the Union that does not have some sort of dahlia society at the present time. Next to the American

Rose Society, the American Dahlia Society has the largest number of members and affiliated members of any organized group of horticulturists.

It is by far the most popular autumn flower in American gardens today, and next to the rose it is more widely disseminated than any other popular flower. It is even ahead of the rose in popular interest. It is a conservative estimate that there are more than a thousand shows in various parts of the United States, devoted entirely to the dahlia, or with the dahlia as the center of interest. No other flower has a record to compare with this, and it is the dahlia's ability as an exhibition flower in these shows that has made it the flower of greatest popular interest.

Nor has the horticultural world given the dahlia full credit for the part it is playing in increasing garden interest generally. It has the ability to make flower enthusiasts of those who never took an interest in horticulture before. Through the dahlia they become general flower lovers. It ranks with the sweet pea and tulip in variety of color, but it is far ahead of these two flowers in size and effect. In color the dahlia ranges from the deepest red to pure white; from the palest primrose yellow through gold, copper, bronze, amber, salmon, rose pink, shrimp, burgundy, lavender, orchid, claret, royal purple, magenta, scarlet, crimson and hundreds of thousands of variations and shadings of these colors. There are flaming, brilliant, metallic colors and there are soft, delicately-shaded pastels. No one has yet secured a real blue in the dahlia and some horticulturists tell us that this color will never occur. So many startling changes have happened in the dahlia in the last quarter of a century, however, that I am not one of those who predict that we will never have a blue-colored beauty.

As to size, the dahlia ranges from the miniature Pompon, which must not be more than two inches in diameter, to the large Decorative and Hybrid Cactus types, which measure fifteen inches and over in diameter. There is just as wide variation in type from the prim, regularly-petaled Pompons and Singles, to the loose-petaled, shaggy Cactus and Hybrid Cactus types, that are sometimes six or eight inches deep. There are ten accepted types in the current classification of the American Dahlia Society, namely, Cactus, Hybrid Cactus, Decorative, Show, Hybrid Show, Pompon, Peony-Flowered, Duplex, Single and Collarette.

Heretofore the matter of pollenization of the dahlia had been left to the work of Nature and growers are just beginning to breed the dahlia by hand pollenization. From these crosses we may look for startling changes in color and form during the next few years.

There are two tree dahlias, *Dahlia maxoni* and *Dahlia imperialis,* which are at the present time growing wild in Guatemala and Yucatan. So far no definite crosses have been made between these tree types and the types which are at the present time growing under cultivation in American gardens. Perhaps horticulturists will give us some entirely new breaks in the dahlia when these various types are crossed successfully.

Practically every dahlia catalogue gives definite suggestions for cultural directions. There are many controversies going the rounds at the present time in regard to various problems in the growing of dahlias. The dahlia is an easy flower to grow, and any amateur who will follow general cultural directions ought to succeed in securing good blooms.

The dahlia flower thrives in almost any kind of soil, although it succeeds best near the seashore and at high

THE YEAR'S MARVEL
It swept everything before it in dahlia shows in 1928

KATHLEEN NORRIS
The sweepstakes winner at Camden, New York, and Trenton

altitudes, in those sections where the day's sunshine is warm and the night air is cool. The time to plant the dahlia is anywhere from May 1 to July 1. In the regions where frost hits in September, the dahlias should be out before June 1. Where frost delays until October 1 or November 1, dahlias can be planted as late as July with every assurance of success. It takes from sixty to seventy-five days to get a plant into full bloom from the date of planting. The argument over whether green plants or tubers should be planted always brings out a heated debate. It does not matter much to the average amateur, however. Both succeed equally well, and about the only difference in the two methods is that green plants will give better exhibition blooms, while tuber-grown plants are likely to produce better tubers. There is no such thing as over-propagation in dahlias. Rather, it is a question of good and bad propagation. The fact that the amateur can secure twice as much for his money in green plants as in tubers should be taken into consideration. On the other hand, if anything happens to his green plant it is usually lost whereas a tuber will probably

THE TRUE SHOW VARIETY

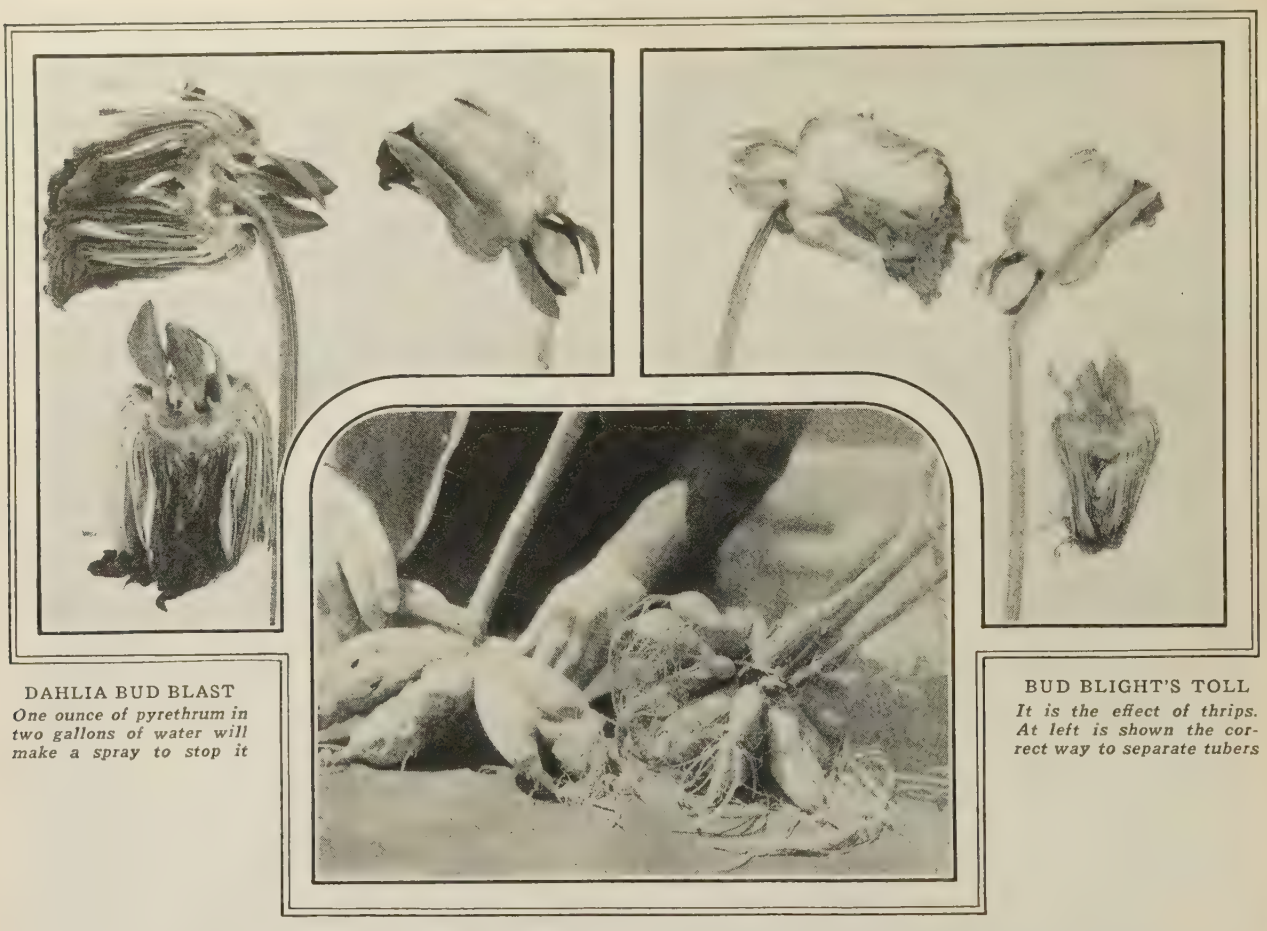
"Jean Kerr", whose popularity has lasted for more than a decade. Florists thrive on such favorite varieties of the dahlia

THE AMERICAN CACTUS TYPE

"Eagle Rock Gem", a California product. This variety becomes more than fifteen inches in diameter

send up a second shoot. Dahlias should never be planted in shady places but in full sunshine. They thrive on water, and a good soaking twice a week is better than a limited amount given every day.

The dahlia, unlike the potato, has no eyes on the tuber. This tuber or bulb is merely a storage house for food. The eyes are at the surface of the soil in a ring around the crown of the plant. It is best to wait until the sprouts start on this crown before the tubers are divided for planting in the springtime. Never more than two shoots should be allowed to a single plant, and it is better still if only one is permitted to grow. The tubers should be planted from six to eight inches deep, with the sprout, which is clearly indicated, facing upward. A heaping handful of bone meal should be placed underneath the tuber with a slight covering of soil between the tuber and this bone meal, when planted. It takes about twenty days for this bone meal to start feeding the tuber, but it is just at the time when the plant needs stimulation. When



DAHLIA BUD BLAST
One ounce of pyrethrum in two gallons of water will make a spray to stop it

BUD BLIGHT'S TOLL
It is the effect of thrips. At left is shown the correct way to separate tubers

the plant is eighteen inches high, the top shoot should be pinched out, thereby forcing side shoots to grow, and thus securing a broad symmetrical bush instead of a bush with one main top shoot. Try to keep the plant growing all the time. If you run up against a spell of very dry, hot weather when your water supply is limited, wait until the spell breaks and cut the plant back at least four or five inches. It is fresh, green growth that produces the best blooms.

Unless you want very early bloom, all of the first buds should be pinched off, insuring this strength for the growing plant, rather than for the early blooms. The dahlia is an autumn flower and gives its best from the first of September until frost. Some extra stimulation should be given to the growing plant from the first to the fifteenth of August in the way of nitrogen fertilizer. If you have access to a supply of liquid manure, that is both feasible and practicable; if not, then use one of the nitrogen fertilizers sold through every seed store, and follow directions as given on the package. Practically every dahlia plant produces its blooms in exactly the same formation,—namely, one main bloom to a stem, with two side buds and stems. Each of these side buds should be plucked off as soon as it is large enough to break without injuring the plant. This throws double strength into the center bloom, and it is by this method that the large, spectacular flowers are secured. This is known as disbudding.

AS ORDERLY AS A NEW ENGLAND CONSCIENCE
The prim, regularly-petalled Pompon contrasts greatly with the Cactus type and proves the great versatility of the dahlia

The flowers should be cut when they are "ripe". Wait until the back petals begin to show the first signs of drying. By cutting at this time you will find that the blooms will last much longer than if cut "green". Cut at sunset, and put the dahlias into cold water immediately. By this means they will keep in the house for several days.

When frost has killed

(*Cont. on page* 188)

THE MEDITERRANEAN FROM EZE ON THE CORNICHE ROAD
Whinchats, stonechats, Sardinian warblers and many other birds are numerous in this vicinity

BIRDING *in* SOUTHERN FRANCE

Rich in Scenic Charm, It Abounds, Also, in Bird Life

by L. Raymond Talbot

Illustrations by Coldstream Tuckett and the Author

THE steamer came in past the Château d'If, where the Count of Monte Cristo dragged out bitter years, and anchored in the busy port at Marseilles. We were on our way to the Riviera, country of warmth and sunshine, flowers and bird songs. Here it was, land of magnificent scenery; of roses, violets, jonquils, wallflowers; orange and lemon blossoms scented the air; mimosa with its great clusters of yellow flowers that hung heavily like bunches of grapes from the drooping branches of the tree or shrub.

The train ride to Nice was a continuous panorama of ever-changing, ever-beautiful scenes. We wanted to spend a week at every resort we saw, and a month at some of the tiny villages set in the midst of soft rolling hills just back from the seashore.

The Chaîne des Maures, behind Hyères, lured us and we explored these little mountains later, finding them a splendid region for bird study. It was the only place in Europe where we found jays in any considerable numbers. A white patch at the base of the tail shows conspicuously in flight and makes the European jay look like a flicker. He is a brownish bird, but on his wings he has beautiful bars of black, white and light blue.

R. F. GAIT

THE SOLEMN-VISAGED PUFFINS
One of the most amusing and interesting of the birds found along the shores

This article is one of the series by Mr. Talbot on the trip of a group of bird lovers interested not only in the usual sights and scenes of Europe, but in the interesting and varied bird life that can be found

At Nice, we never tired of walking along the promenade which skirts the bay,—Angels' Bay, they call it,—and looking out over the blue, blue Mediterranean. We liked the old city and port too, while the flower market drew us again and again; it

was a veritable blaze of color. We had always known of the Riviera as a land of flowers, but we had never had the slightest conception of the untold millions of blossoms we should see.

We became accustomed to hearing birds sing in winter, a novelty to us northerners. To find blackcaps singing everywhere,—in gardens, along city streets, in the country, when we walked or drove out among the hills which come down so close to the sea,—was a new experience. Of all the bird songs we have heard in Europe, this song of the blackcap is perhaps our favorite.

Another familiar sight was the black-headed gull. Hundreds of these birds wheel about close to the Promenade and even swoop down to catch food which people throw them as they pass. From Nice, of course, we drove along the Corniche Road to Mentone and the Italian border, stopping on the return at Monte Carlo. We liked even better the ride on the so-called Corniche d'Or, west of Cannes, then over the Estérel Hills; there is more variety and some of the views of the Mediterranean make words futile. Best of all was the ride through the Gorge du Loup to Grasse, where we saw tons and tons of flowers being made into perfumes. The distillation of beauty was a new process to us.

On this trip we saw our first brand new bird in this region. "Look at the cigar store Indian", said one member of our party, one who is old enough to remember those curious wooden effigies which used to adorn the front of tobacco shops. He pointed to a brown bird with a crest of alternate cinnamon brown and black; only this was different from any crest we ever saw on any other bird. It certainly did look like the headdress of the American Indians of our old-fashioned story books. The bird flew along slowly in front of the car, obligingly alighting now and then in the road to show off, and once or twice he gave his call, "huppe", which is his French name. It was a hoopoe, one of those rare birds we had read about and wished we might see; it seemed too good to be true to have one performing so well a few feet away.

We passed several days at the Loup later and explored not only the beautiful gorge but all the surrounding country. We were glad we did, for we found this one of the best places for bird study we had yet come across anywhere in Europe. Dippers and gray wagtails galore abounded in these Alpine foothills. Many other old bird friends were there, and new birds as well.

IN THE ALPINES OF PROVENCE

Here the party saw the ring ouzel and found many goldfinches and serins

High above the stream where the overhanging rocks on either side close in to make a narrow ravine we saw a score or more birds which looked like our bank swallows, brown and gray. Bank swallows, the same species as in America, are common in Europe; here they are called sand martins. Only these birds at the Gorge showed white tips to their tail feathers, and when we finally were able to examine one closely we found he did not have a brown band across the breast. Crag martins, they proved to be, birds of the Mediterranean countries; well named, we decided.

A SNIPE WAS DISCOVERED

With his long bill he was identified and was much like his American cousin

One day we kept on to Gourdon, a tiny village towering a thousand feet almost straight up in the air above our hotel at the entrance to the Gorge. We had seen the lights at night, and finally satisfied our curiosity as to how in the world anyone ever reached those houses perched away up on the tip of the mountain. We came

REED WARBLER
It is a plain and very inconspicuous brown bird

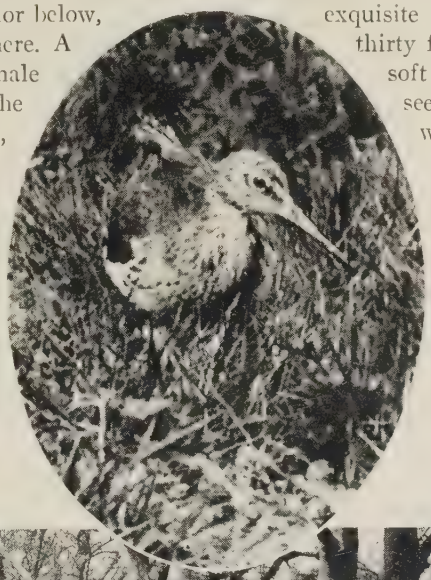
down over the face of the cliffs, as the peasants do; but on the way up we were glad to use the road. Up there on the lavender-covered meadows we found many meadow pipits. Our walks in this region also introduced to us the crested titmouse, a neat brown and gray bird with a very pronounced speckled black and white crest.

For the first time we saw whinchats and stonechats together and felt sure we could distinguish them. They are so much alike! Both are brownish and black mottled above, and chestnut color below, with considerable white here and there. A black throat serves to identify the male stonechat in spring plumage; but the female lacks this distinct black patch, and besides, the whinchat has black on the sides of the head. No wonder we had sometimes been at a loss to say which bird we were looking at. For both are common and frequent the same sort of stubbly fields. These fields are often overgrown with gorse,—or furze or whin: all three names are used for the shrub with terrible thorns and beautiful sweet-scented yellow flowers. From it the whinchat takes his name.

It was a red-letter day when we saw our wall creeper, another of those birds upon whose pictures we had often gazed longingly. The book says "recorded only five times in England", and "noted as a wanderer in France": small chance, we thought, of ever seeing that bird!

THE LAPWING
This bird finds sanctuary in the Camargue

Then one day as we walked along the road beside the rushing torrent an exquisite bird alighted on the stone wall not thirty feet away. He was of two shades of soft gray,—pearl gray and slate gray, it seemed to us; across and through the wings was a band of crimson. We all said it was the most perfect color combination we had ever seen. We held our breath, for fear this dream-bird would vanish. But he stayed there, apparently unafraid. Finally he flew across the ravine and for several minutes performed on the cliff beyond; he seemed to be walking straight up the perpendicular



(Right) THE REDSHANK
With caution the bird approaches its nest

(Below) NEAR ARLES
A beautiful center of scenes and bird walks

wall of rock, only he kept his wings moving slightly, and as he did so that beautiful red blended with the gray to make a most marvelous pink. Then he disappeared. But somehow we felt as if we had seen enough beauty to last us all day, if we did not see another bird. Surely the Gorge du Loup had proved good bird country.

Finally we left the Riviera and the Maritime Alps and went on to Arles. For several days we reveled in Roman ruins and became again conventional sight-seers. The Museon Arlaten, or museum of things pertaining to Arles and the life of Provence, impressed us as the most fascinating place of its kind we had ever seen. Arles is a good center for excursions to numerous other interesting old cities. Avignon is near here, and Tarascon, home of Daudet's immortal Tartarin. And St. Remy, with more Roman ruins, is only a dozen miles away, within hiking distance.

IN THE NICE FLOWER MARKET

Blackcaps sang everywhere in the city and in the country of Southern France

It was in the Alpines behind St. Remy that Tartarin and his fellows in the Tarascon Alpine Club trained themselves for more strenuous mountain-climbing in the real Alps. So one day we wandered around among those hills, in memory of Tartarin. It is a beautiful region, and we saw there our first and only ring ouzel. *Merle* (blackbird) *à plastron,* the French call him. Now a *plastron* is one of those "false bosoms" which boys (and sometimes men) wear on Sundays with a week-day shirt, to give the appearance of a "boiled shirt". The French consider them quite the thing. So "blackbird with a white shirt front" struck us as an unusually expressive name for this dark, almost black bird with a broad white patch across his breast.

Below Arles stretches the vast marshy area of the Camargue, the Rhone Delta. Mistral, the Provençal poet, describes it in his poem *Mireille.* Daudet brings it into some of his short stories. So we were interested to see this strange region. It is not exactly beautiful, in the sense that the Alps or the sea or the English lakes are beautiful, still that great expanse of monotonous flat country, with shallow ponds and unhealthful swamps, has a certain charm all its own. One day we walked along the shores of the Vaccarès, and were so impressed with the possibilities of this pond for bird study that we went back and spent two more days in the same region. These were among the most successful bird walks I have ever enjoyed. Skylarks by the hundreds enlivened the air with their songs. We found other kinds of larks, also, especially the crested lark, whose name is sufficiently descriptive, and the calandra lark, a bird seldom seen outside of southern Europe, recognized by its heavy bill and a large black patch on either side of the throat. Meadow pipits were everywhere. To our delight we saw two hoopoes and heard several more calling in the distance.

Here for the first time we found reed warblers; they frequent the same sort of places as the sedge warblers of Switzerland. The reed warbler is a plain, inconspicuous brown bird. But as he hops about among the brownish reeds, he draws attention to himself by chattering continuously.

Naturally the Vaccarès is a splendid place for ducks and its muddy shores teemed with waders. Among the former was a sheld duck,—the sheldrake which mistakenly gives its name to the mergansers of our Atlantic seacoast. This real sheldrake is a brilliant bird of black and white and red plumage, strikingly beautiful.

Of the "shore birds" the redshanks were by far the most abundant. They reminded us of our yellowlegs. Both are "tattlers", which means that they are noisy birds. The calls of the two birds sound alike, and they bob up and down as they feed in the marsh or on the mud flats.

There were little stints and dunlins, those common waders, and one of us picked out a bird that looked and acted for all the world like our familiar American spotted sandpiper. A common sandpiper, it proved to be,—although our experience leads us to believe it is not so common as the name suggests.

"Look at that bird fly across the marsh. He zigzags just as our snipe does". Fortunately we had a good look at him later, and his long bill told us beyond doubt that he was in reality a snipe, and quite similar to our American bird. We were delighted to see a flock of fifteen golden plovers. These are practically the same as the American golden plover, only sub-specific differences being recognized.

Our real find here was a black and white bird with the bill perfectly straight instead of being curved as the avocet's is. His extremely long pink legs helped us to identify him as the black-winged stilt.

The Rhone Delta is on one of the most frequented migration routes, so that countless thousands of birds pass through it and stop over for a while on their way to and from northern Europe. In addition, hordes of other birds spend the winter here. There were magpies, black and white dashing birds, unmistakable and very numerous; partridges; curlews, very abundant, similar to our rare Hudsonian curlews; kestrels; linnets; buzzards; the rare Montague's harrier; lapwings, or green plovers,

(*Continued on page* 203)

FORESTS IN SINGLE FILE

by Otto Wilson

"PLANT the country roadside to trees? Of course! What a happy idea! But why hasn't it been done long ago?"

Such, I am sure, will be the instinctive reaction of every public-spirited American to the proposal, now being heard more and more widely, that we shall use the vacant land alongside our highways for setting out a new kind of forest—a single-file forest which eventually will criss-cross the land with endless miles of rippling green foliage. Certainly it will be the response of every member of the Grand Army of Tree Lovers.

I for one can well remember the quiet little "Hooray!" that sounded in my own mind years ago when first this idea came to my attention. I was an instant convert. Whatever it may be now, the typical Mid-West road of fifteen or twenty years ago was anything but a joy forever. A sun-baked, dust-covered trail, with its three long ruts worn deep by old Dobbin's feet and the steel tires of countless buggies and wagons; margins of uncut grass, struggling with ragweed, iron-weed, and what-have-you; flanking lines of fences, sagging and melancholy —such was the average country "pike" over which we made our tedious way whenever occasion called us abroad. This roadway I suddenly saw, in vision, transformed into a noble avenue of shade running between two straight tall files of trees which marched off into the distance as far as the eye could see. The whole bare countryside became a park. The waste ground of the right-of-way was made to yield handsome returns to society in Nature's most worth-while crop.

But the climax was capped when some modern Johnny Appleseed suggested that the trees set out along the roadside might well be fruit trees or nut-bearing trees. Imagine, if you can, the sensations of a boy with a gunny sack over his shoulder, facing a double row of hickory-nut or walnut trees heavy with their autumn treasure, or trees drooping with red apples, and knowing that they ran on and on, perhaps two thousand miles across the land!

It will be a long while before any such delectable vision becomes a reality. But a magician is abroad in the land, and he has brought the dream much nearer reality than anyone a few years ago would have had the right to expect. His name is Motor Car. He has already abolished dust and mud over thousands of miles, and has stirred our citizenry out of their lethargy in such numbers and to such activity as no people have ever been stirred before. He is energizing millions into visiting their neighbors' habitats, and inducing in these neighbors' minds the uneasy feeling that they really ought to spruce up for the swarms of newcomers—also that it will be very good business to do so. For the newcomers have prodigious appetites for "gas", pseudo-canine sandwiches, and scenery, and they go where these are most easily to be

WITH the coming of a new season of the open road Nature Magazine renews its campaign for Outdoor Good Manners and Roadside Beautification. In the accompanying article Mr. Wilson makes the plea for roadside tree-planting, one of the chief constructive activities for beautifying our highways. This article is a prelude to others on the billboard nuisance, the unsightly roadside stand and on good manners in the out-of-doors generally. For organizations and individuals active in public education along these lines Nature Magazine has material available on request. Let's help to make our roadsides beautiful and our outdoor manners better

had. Hence the rapidly growing interest of a thousand scattered communities in the subject of tree-planting, in dressing themselves up for company in permanent gowns of green.

Actual planting of roadside trees has gone farthest in those sections where good-roads building is most advanced. States and communities which have provided themselves with fine, hard-paved highways naturally find themselves interested in taking the next step and making the highways attractive—and "attractive" may here be considered as having its literal as well as its derived meaning. Two good examples, east and west, are found in North Carolina and California.

ALONG A BEAUTIFUL RURAL ROADSIDE
These lovely maples make the trip along this Vermont road a joy to the traveler

In the Tarheel state there has been in recent years something like a new birth. The people are alive with an up-and-coming spirit of enterprise. Among other achievements the state has presented itself with a magnificent good-roads system, of which (and justly so) it is not a little proud. And now this pride is working itself out in a general dressing-up, one of the features of which is a widespread movement looking to roadside tree-planting.

Women's clubs have made tree-planting campaigns the leading items on their programs. Civic organizations and the big companies which dominate the mill towns, for example, have joined in heartily, and many an individual landowner has taken to tree-planting on his own initiative. Out of one town a highway has been laid out which boasts seven miles of crape myrtle trees in a single line down a central parkway. Others have specialized on pecan and black walnut trees, creating a near-paradise for small boys and squirrels and a valuable timber supply for coming generations. Not so many years in the future motorists in North Carolina will be skimming along in the shade of these trees, and carrying to distant parts, in the shape of a host of pleasant impressions, a most effective advertisement of the enterprising state.

California has long been alive to the effectiveness of such advertising. In southern California particularly miles on miles of avenues of palm and eucalyptus radiate out from the chief centers, sometimes penetrating country where no other trees are to be seen. But the public spirit of these regions has not contented itself merely with tree-planting. Rose bushes by the thousands have been raised up in the vacant roadside spaces, and fences are often hidden in the massed bloom of climbing varieties. One happy individual conceived the plan of spreading broadcast seeds of wildflowers along the roadside. Presently others took up the idea and the California Wildflower Club was born, each member of which pledges himself to buy wildflower seed and scatter it to the winds when he drives out.

But it is Massachusetts, that fine old state whose citizenry remain traditionally so susceptible to appeals to public interest, which has gone farthest officially in fostering the beauty of its roadsides. Its efforts have won the applause of the federal highway authorities.

"The work of roadside treatment", they say, "which Massachusetts started in 1921 has within a relatively few years produced a marked effect on the beauty of its highways, which will be even more striking in future years. Massachusetts is one of the few states where organized attention is given to roadside beautification."

Because of its systematic

ROADSIDE TREES PLANTED AS MEMORIALS
Young trees set out on Sixteenth Street in Washington, D. C., promising future beauty

handling of this work other states may well take a leaf from the Bay State book. Whenever a road is laid out as a state highway it is made wide enough to permit "beautification" treatment. No one can either plant or destroy growth on the right-of-way without a permit. Under a highway engineer an expert landscapist gives all his time to improving the appearance of state roads. He has a force of men whom he specially trains for the work, and among other things he maintains a nursery where trees and shrubs are grown for roadside planting.

A HIGHWAY THAT IS PLANNED FOR PLEASURE
There is no reason why our roadsides should not be made as attractive as this

Tree planting is only a small part of the work of this force. Massachusetts is an old state, and unlike many of her sister commonwealths she does not need big planting programs so much as the attentive care of existing growths. Her employés go about the state grooming the highways much as a great landed proprietor would look after the wooded parks of his estate. They prune and spray and guard against marauding insects and deadly fungus threats. Dead wood is cut out and dead trees removed. Wounded trees receive treatment in accordance with the best practices of the modern science of tree-surgery. One very noteworthy feature of their work is the cutting out of roadside undergrowth which often masks vistas of hill and stream offering delightful prospects. Trees are planted where desirable, just as coverings of vines and flowers are thrown over ugly patches of bare ground, but with an eye to the general landscape effect. Nearly always they are distributed in groups or planted singly and not marshaled into long straight lines, the one idea always uppermost being to create a landscape picture which shall offer to the eye of the passing traveler a succession of pleasing effects.

But here in the midst of all this talk of beautification I hear a voice with a distinct note of grievance in it.

"It is all very well," says some Count of the Gasoline Trail, "to improve the view for us by adding all these growing things. But don't you think, while you are at it, that a little subtracting would also help out a lot?"

Of course he means billboards. What value in creating lovely backgrounds if the all-penetrating advertiser can come along and use them as settings for proclaiming the virtues of Sticktight Porous Plasters and Boo-Boo Cigarettes? Well, all that can be said in reply is that billboards represent as yet an unsolved problem, but one to which a solution is being actively sought. The courts are even now balancing the rights of high-pressure salesmanship in assailing the public mind from earth, ether, water, and sky against the right of the public to an enjoyment of uncommercialized natural beauty. But at least if it turns out that we must have billboards in copious amounts we can insist that travelers shall see them through a screen of trees and shrubs. Driving along past a colonnade of stately trees the motorist would probably give little heed to the flaring advertisements in the background, or if he did they would lose most of their effectiveness.

If this broad United States is eventually to become a forest of roadside trees how is the consummation to be brought about? It takes only a little inquiry to see that the big factor will be the time-honored American one of local initiative. Several states besides those mentioned have made gestures favoring tree-planting, but for the most part that is as far as they have gone. Half the states have no legislation at all

ONE SOLUTION OF THE BILLBOARD PROBLEM
Signs can hardly be read through files of trees planted along the right of way

NUT TREES MAKE EXCELLENT PLANTING ALONG HIGHWAYS
Here is a planting of California black walnuts found along the highway west of Davis, California

on the subject. The others usually content themselves with simply holding open the door to anyone who wants to go ahead with planting, permitting him to do so in cooperation with state forestry departments or tree wardens and sometimes promising protection and maintenance. But in no case do they adopt positive tree-planting programs. So the job of initiating such programs reverts back to the locality, and this means, as a rule, to the individuals whose interest may have been aroused.

Ordinarily the most effective way is to get one of the local public-spirited societies interested. Often only a suggestion is required. Now that catering to tourists has grown almost into a major industry, tree-planting which will draw the stream of traffic is a very practical activity for any community and is quite in line with the purposes of business men's groups such as chambers of commerce and Rotary clubs. Women's clubs also need little persuasion to fall in with any constructive plan.

One factor that has led to the planting of thousands of trees is the desire of many communities to set up memorials for their war dead. What could be more fitting than to raise up to the memory of a soldier, especially one who still sleeps in France, a straight, tall, live and growing shaft, suitably marked to show that it is his particular monument?

With the necessary interest aroused and support assured it is time to call in the tree expert, for roadside tree-planting offers many problems, and mistakes will show up for a long while. Often the state board of forestry or the state agricultural colleges will send landscapists and experts whose advice may be invaluable. It is especially desirable that the right kind of trees should be planted. Here the federal government offers its help. It has made careful studies of the trees best adapted to different regions of the country, as well as the best practices in planting, and has publications on the subject ready to send out to inquirers. But the personal supervision of the whole planting program by someone familiar with the subject, if it can be had, is necessary.

As for the all-important question of cost, if the local funds will not reach far enough they can sometimes be supplemented by state or county grants, or even by the national government. In the last appropriation bill providing $75,000,000 annually for aid to the states in building highways a provision was included permitting the use of federal funds for planting trees for shade in every case in which the Secretary of Agriculture and the state highway department should consider it practicable.

"Of the trees available for roadside planting," says the Department of Agriculture, "the oaks are the most desirable. Although some of the handsomest species, such as the white oak and the live oak, are slow growers, others like the red oak are rapid growing.

"In the drier parts of the country oaks are of slower growth than in the more humid sections and never attain the size of the same species under more favorable conditions, but they are worthy of planting because ultimately they make fine trees. They are hardy, most of them are long-lived, and for the most part there are comparatively few diseases and insects that seriously attack them."

There are more than two dozen good varieties of oak to choose from. But for sheer beauty of effect some of us who have seen the towering Gothic aisles of New England towns will not hesitate in choosing a favorite. The great elms, pure lyrical poems in themselves, seem designed by Nature for highway planting.

But whatever kind of tree may be decided upon as best, almost any kind is better than none. That is rapidly becoming recognized. Is it too much to hope that presently there may be spirited competition between communities and even states in the planting of roadside trees? Let all lovers of trees lend a helping hand.

Private Lands Must Go!

Interior Bill to Aid Solution of Yosemite Problem

THE STROKES of Calvin Coolidge's pen, signing the much delayed Interior Appropriations Bill, will probably have swept away the last financial barrier to the saving of Yosemite and cleared the road for a general solution of the private land situation by the time this article is read. On the west coast the mandate of the people, it is reported, has resulted in keeping the axe from Yosemite Park timber for one year at least.

The same national park provisions as passed the House in December undoubtedly reached the President's desk. The clause permitting condemnation of lands for national park purposes alone was endangered by the Senate. While only $250,000 will be available at once, contracts for land purchases up to $2,750,000, made as private funds supply equal amounts, are authorized. Already $1,000,000 has been offered by patriotic citizens to save the Yosemite.

Armed with these monetary and condemnatory weapons, friends of the parks will immediately move to secure the 11,000 acres of non-private Yosemite timberlands, as the first step toward completely clearing the parks.

Public opinion, as stirred up by the Press, the American Nature Association and other conservation groups, has reverberated louder than the sounds of the lumber engines near the borders of the California Park in the past few weeks, and while between 56 million and 80 million feet of yellow and sugar pine will be cut on the Merced River watershed during the coming season, it is reported that the latest plans of the Sugar Pine Lumber Company, the owner of the greatest block of private lands within the park, do not include any cutting inside of the park boundaries this year. It is also reported that a fringe of trees will be left along the Big Oak Flat Road. If these reports be true, it is hoped that when the lumbering season following this one comes by, every stick within park boundaries will be publicly owned and that the cloud that has hung over Yosemite will have been dissipated forever.

Though economic reasons as well as public spirit have kept the Fresno concern from advancing into the park, the officials of this company will not, it is understood, withstand the popular will, and refuse to sell for a fair price. Arthur Henry Fleming, the president, has been one of the most generous philanthropists on the Pacific Coast. One of his gifts has been a $5,000,000 donation to the California Institute of Technology. He is president of the Board of Trustees of this institution. His reputation for fair-dealing and public spirit, built up through years of service, has never been questioned. In this matter so close to the interests of his state and of the citizens of the United States, he will undoubtedly act in accord with the past. As a business man, a fair equitable price will be all he will ask.

The period of hard work on the national parks has just begun. Some 30,000 acres are yet to be secured for the public. It is to be hoped that owners will be public-spirited in giving up their holdings for a fair price. The report of W. B. Lewis, Assistant to the Director, outlining what must be done, points out that the Transmountain road in Glacier National Park is being held up by private lands, subdivisions threaten sections of Yosemite and other parks, and undesirable commercial enterprise may be imminent. He writes:

"The summer-home-site evil is at its worst in Glacier, where at both ends of Lake McDonald nearly 200 individual owners have erected flimsy, unattractive structures presenting a striking example of landscape despoliation . . . Then comes Rocky Mountain with its extensive private holdings monopolizing the best available sites for public camp grounds . . . "

The part of the people in the

(*Continued on page* 196)

STEPHEN T. MATHER

Stephen T. Mather, the first Director of the National Park Service, brought to a close thirteen years of devotion and labor for the National Parks by his resignation from office on January 8, for reasons of health. Horace M. Albright, formerly the Field Assistant to the Director and the Superintendent of Yellowstone National Park, has been appointed to succeed him.

To Mr. Mather goes a large portion of the credit for the present National Park system. When he first took office in 1915, the parks were little appreciated, inadequately administered, in danger of private exploitation and poorly provided for. He built up an administrative organization competent to handle the vast areas under control. When private enterprise has threatened the integrity of various parks, he has worked unceasingly to enlist powerful private and public aid, and has even given hundreds of thousands of dollars of his own private fortune to purchase and give endangered land to the government. The parks were created for the use of the people, he believed, and one of his greatest achievements has been the creation of a sincere public devotion to and appreciation of them. His dreams now seem about to come true—now private lands seem about to be eliminated and the unity of the park structure preserved for all time. Those working for or with him will always be loyal friends and admirers, appreciating his wholesome idealism and sincerity.

The American people are fortunate that it is to Mr. Albright that he is turning over the reins. The new Director is a capable administrator, an able leader and a real fighter for the National Parks. He has been connected with them as long as has his former chief. There will be no retardation of progress under him, and Mr. Mather will be able to see, from the sidelines, his important projects carried on.

Washington picked the Rhododendron by popular vote

Oregon's Legislature selected the Oregon Grape

California's Poppy inspired the name "Land of Fire"

The Pasque Flower of South Dakota

THE Northwest is the home of myriads of flowers but none of them can claim the fame of the eight on this page, which represent their states with dignity and beauty. One of this group, the columbine, is now valiantly fighting for the honor of National Flower. It is close on the heels of the wild rose in the American Nature Association National Flower Poll.

Idaho's sprightly Syringa is much loved

Wyoming's Indian Paint Brush

The Columbine of Colorado

Montana's Bitterroot was named for Meriwether Lewis

WILD ROSE

WILD ROSE AHEAD

Columbine and Goldenrod Close to National Flower Poll Leader

Garden and Nature clubs are the leaders to help direct a wise choice for National Flower. Every individual in every community has a vote which should be cast at once. Tabulate the preferences of your friends on the ballot on page 186 and send to National Flower Editor. Teachers will find a helpful suggestion on page 190. Write for ballots and information.

TOTALS

Rose	9104
Goldenrod	5586
Columbine	4442
Phlox	3706
Daisy	2735
Dogwood	2445
Violet	1723

GARNERING 9104 votes out of a total of 34,339 cast to date in the American Nature Association National Flower Poll, the wild rose increased its lead over the columbine, while the goldenrod, phlox and violet still contested for places near the head of the list of forty-five floral candidates.

This month's returns marked the first driblets of the flood of public opinion, which is slowly awakening under the influence of Nature lovers and flower enthusiasts. The full sweep of the popular will has not yet got underway, however, and the plea for every citizen to vote must be made still louder by every proponent of a national flower, if such a symbol is to be set firmly on a democratic basis.

Though a considerable portion of the Nature vote is forthcoming, the American Nature Association is not willing to be satisfied with that alone. It does not wish a national flower chosen by specialists; only the choice of the people should prevail. When the polls have finally closed, every person, young or old, must have had at least the opportunity to vote.

A wise, careful choice depends now largely on flower lovers and garden clubs, who can reach groups Nature Magazine cannot, and direct intelligent voting, and can arouse communities to see that logical candidates are considered.

You, the 120,000 members of the American Nature Association, and you, the voters who have already expressed your preference—you are the leaders.

Will you take up the slogan, "Get Out the Vote"?

The schools, Girl Scouts, Camp Fire Girls, and women's clubs have rolled up the largest poll of any groups. Increasing numbers of business and civic organizations are sending their ballots to the 1214 16th Street office of Nature Magazine.

The Camp Fire Girls, whose special project during 1929 is flower conservation, opened their drive in January by conducting national flower polls in schools and clubs, and became one of the important factors in the arousing of public interest.

From distant Ketchikan, Alaska, Troop No. 1 of the Girl Scouts caught some of the enthusiasm shown by their sister scouts in the states, and polled a solid vote. Their action served to complete the chain of Girl Scout cooperation, which has extended through every district in the nation.

The National Life Conservation Society, whose battle against billboards and for the protection of forests and wild life under the direction of Mrs. C. C. Marshall of New York has won for it a first place in conservation ranks, has joined the groups helping to elect a suitable national flower. Mrs. Marshall is also starting work to bring out the vote in New York State's women's clubs.

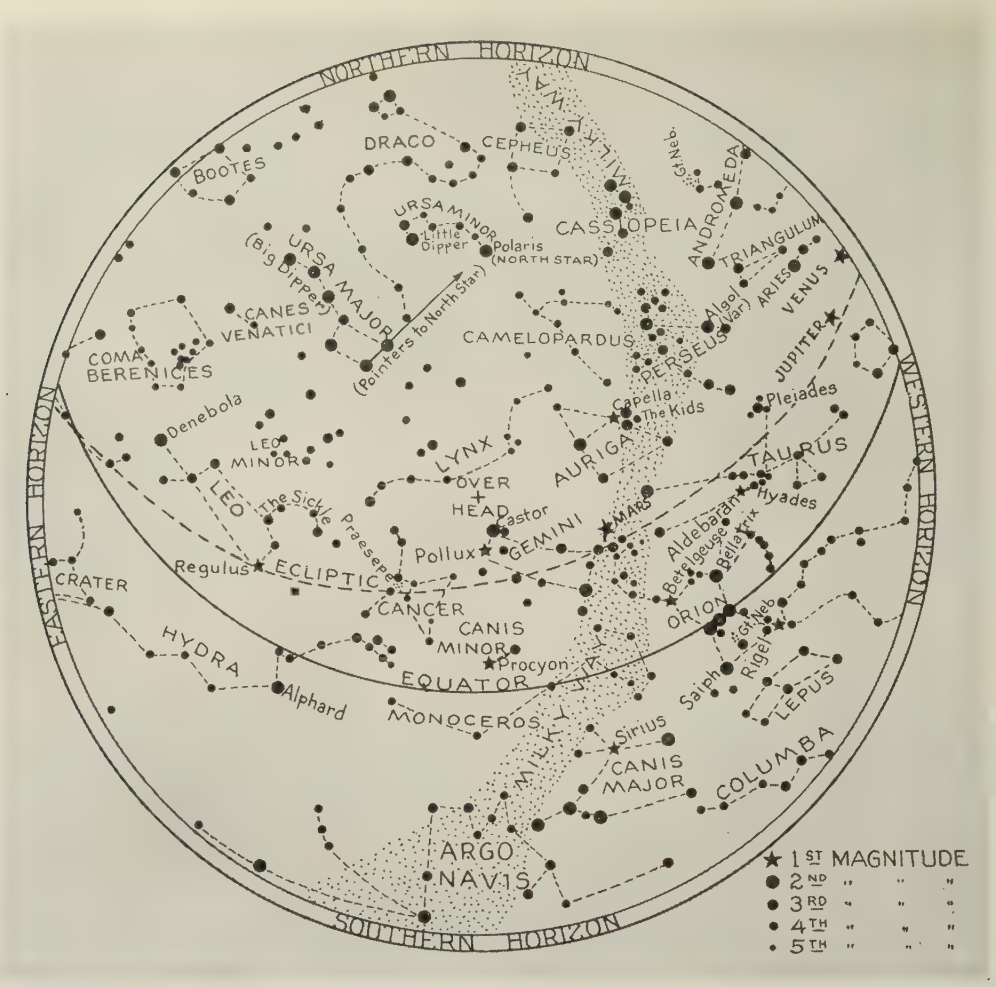
Both faculties and students have united in the schools to roll up a vote heavier than from any other source. In South St. Paul, Minnesota, the leadership of Mr. B. V. Beadle, principal of the High School, brought out more than 2,800 votes. Every pupil took part. The Reynolds High School of Winston-Salem, North Carolina, chose the goldenrod by a safe majority after twelve members of the faculty had organized a poll.

These are but isolated examples of the enthusiasm the National Flower Poll has brought out, and the eagerness to vote which the public is showing, once it is asked to ballot.

The flood of votes is rising. Nearer and nearer comes the time when the true selection of the American people, epitomizing the good qualities of the nation, shall be ushered to the floral pinnacle of fame. You who have voted, you, the members of the American Nature Association, will have played a valuable part in the selection if you will reach your friends, give them the ballots printed in Nature Magazine, and thus lead the way to an intelligent, democratic selection of which the nation may be ever proud.

THE DEMURE VIOLET IS HANDICAPPED BY ITS SHYNESS

YET ITS SUPPORTERS HAVE KEPT IT AMONG THE LEADERS



TO USE, HOLD OVER HEAD WITH TOP TOWARD THE NORTH

For Use March 1, 9 p. m.; March 15, 8 p. m.; March 31, 7 p. m.

NEW WORLDS *to* CONQUER

Great New Telescope Will Bare New Astronomical Truths

by Isabel M. Lewis

AT LAST the astronomer's dream of a telescope of enormous size and power is to come true. A telescope of the reflector type with a disk of fused quartz nearly seventeen feet in diameter is to be erected on a mountain site either in southern California or northern Arizona. A search for a suitable site is now being made.

The funds to finance this great project are a gift from the International Education Board, whose headquarters are in New York, to the California Institute of Technology. In addition to the great instrument and its accessories there is to be an astrophysical laboratory to supplement its work erected on the campus of the Institute of Technology in Pasadena, California.

The problems connected with the making and mounting of a telescope of such stupendous size are many and varied, and experts in the fields of physics, chemistry, meteorology and engineering, as well as astronomy will be consulted. One of the greatest problems will be the casting and figuring of the great disk itself, which will require a period of several years for its completion. A huge block of fused quartz will supply the material for the disk. This material will be used for the first time for such a purpose and it has been chosen because of its known indifference to temperature changes. This fact alone is of the greatest importance. The sensitiveness of the 100-inch Mt. Wilson telescope to temperature changes is so great that extreme care has to be taken to protect it from such changes. The material of which the new telescope is to be made will add very greatly to its power and effectiveness.

So difficult would be the task of transporting the huge

How to Overcome Hardy Plant *Failures*

Start right, right at the start. That's how. And here's the way to know you are right.

The right foundation is just as necessary with a hardy plant as it is with a brick house. Most hardy plants don't go through the first winter well, because they never had enough winter grown into them.

EVERY single hardy plant we sell, is not less than 2 years old, and has come smiling through 2 winters. Such plants have foundation and backbone. Also an abundance of vigorously developed roots, which take right hold when transplanted. And best of all, they cost you no more.

You'll have blooms the first year. That can be depended on.

Send for our Hardy Rock Plant and Hardy Garden Plant Catalog. It's quite as unlike others, as are our plants.

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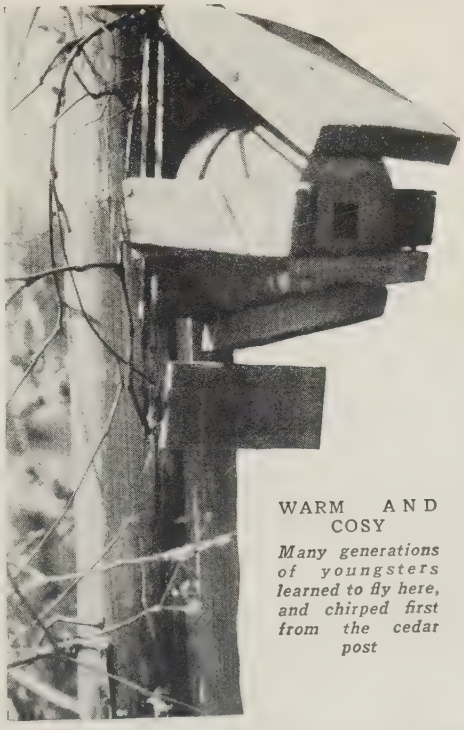
The Flower-pot Bird House

For Twenty Years A Spring Apartment

by Edward A. Preble

"Make me a bird house, Daddy, out of this flower-pot", said little Marjorie, and I saw that the child had been trying to make the hole in the base large enough for a bird's doorway. So I took the brown earthen pot from her tiny hands and with nippers and a coarse file made the small round hole into a square doorway. Then I took a piece of rough board and nailed some cleats to it, making a frame into which the flower-pot could be slipped, with the open part held tightly against the board at the back. Another piece of board nailed to the first one made a roof, and the house was ready.

That was twenty years ago, and the rough little shelter is still on the cedar post where I first fastened it. Each spring a pair of birds look it over and usually decide to lease it for the summer. If I have not thought to lift the flower-pot from its place and tumble out the remains of the old nest, they carry out the sticks and straws. Then they build a fresh cradle, carrying back and using, I have no doubt, some of the very sticks they have just thrown out. Soon the eggs are laid, and a few weeks later the baby birds are learning to fly.



WARM AND COSY

Many generations of youngsters learned to fly here, and chirped first from the cedar post

The little girl who planned the home for bird babies has grown to be a woman, and has a home and a baby of her own. As for the bird children that have been raised within the cosy earthen walls of that discarded flower-pot, their count has long since been lost. But the nursery where they grew up seems to give promise of another decade or two of use, and of many more bird families still to come.

completed disk to the mountain top that it is very probable that the casting and figuring of the mirror will be done in shops erected especially for that purpose on the site of the observatory.

This super-giant among telescopes, twice as great in diameter as the huge Mt. Wilson reflector, will bring into view stars of the twenty-fifth magnitude. According to Dr. W. S. Adams, Director of the Mt. Wilson Observatory, this is three magnitudes fainter than the stars now at the limit of visibility in the 100-inch telescope which photographs stars of the 22nd magnitude. The light of a star of the twenty-fifth magnitude is equivalent to that of a candle viewed at a distance of 41,000 miles and its light is as much fainter compared to the light of Sirius as Sirius is fainter than the sun. The new telescope will have a light-gathering power from five to ten times greater than that of the Mt. Wilson reflector and about one million times greater than that of the human eye. It will extend the limits of the visible universe from about one hundred million light years, which is the estimated limit attained by the 100-inch reflector, to four times that distance or about four hundred million light years.

It should bring into view hundreds of millions of stars now invisible and it should show far more detail of form and structure in all celestial objects now visible. It will be possible to obtain with its aid better and clearer spectra of stars and a greater number of them. The value of this can be understood from the fact that it is upon the spectra of the stars and nebulæ that we chiefly depend for a knowledge of their physical characteristics,—composition, temperature, distance and motion in space and other facts that lead to a knowledge of the extent and structure of the universe. The new telescope should tell us far more than we now know about the universe and all the bodies of which it consists. It will reveal more fully not only our own Milky Way system of stars, in which our sun is one of hundreds of millions of units, of supreme importance to the members of our own solar system alone, but also it should bring into view new island universes whose existence is now unknown to us and which are so distant that their light must take hundreds of millions of years to reach the earth. It should show more detail in island universes already known, resolve many of them into their individual stars and give us a better knowledge of their structure and their distance.

The new telescope will make it possible to measure the diameters of more stars than can now be measured with the 100-inch reflector because it will be possible to use a larger interferometer with which such measurements are made. It will also be possible to measure the heat of the stars to a greater degree of sensitiveness than is now possible. Heat measuring devices have been developed that are so sensitive that temperature changes of a millionth of a degree can now be accurately recorded. With a large telescope it is now possible to record the heat from a candle at a distance of a hundred miles. The great light-gathering power of the new telescope will make it possible to make even more delicate measurements of heat from the stars and surfaces of the planets than are now possible with available instruments. The revelations to come are eagerly awaited.

As Dr. H. N. Russell has said, the new telescope should give us a "weather map of Mars," so sensitive will it be to temperature changes taking place on different parts of the planet's surface. It should also show in great detail the surface markings of the planets and particularly of Mars, Jupiter and the moon, and should greatly increase our knowledge of the existing conditions on the surface of these neighboring worlds. It may solve the problem of the nature of the "canals" of Mars and throw light upon the problem of the existence of life on this fascinating neighboring world.

The progress of the stupendous task of erecting a telescope nearly seventeen feet in diameter will be watched with the keenest interest by the entire scientific world, for all sciences are more or less dependent one upon another, and progress and discovery in one science often vitally affects another. As for the layman, there is something that fires the imagination in the thought of exploring the surface of a neighboring world or discovering worlds in space so distant that the light that tells of their existence reaches us after a journey of hundreds of millions of light years. The light messages that come to us from these far away worlds bring with them the secret of their distance and their nature to those who can interpret them. Upon the skill of the astronomer and the power of his instruments depends the ease with which they may be read and understood. In all branches of astronomy the new telescope should greatly increase the astronomer's ability to interpret the messages that are continually pouring in to us from the depths of space, and linking us to all the worlds beyond.

The March map of the heavens shows Orion well over in the southwest followed by Canis Major with the Dog Star, Sirius, the brightest fixed star in the heavens, nearly in line with the three stars in the belt of Orion. Procyon, the Little Dog Star, is now nearly due south. It forms with Sirius and Betelgeuze, in Orion, a nearly equilateral triangle. North of Procyon are Castor and Pollux in Gemini. Leo is now high in the eastern sky and the Big Dipper is swinging upward in the northeastern sky toward the meridian as Cassiopeia slopes downward toward the northwestern horizon, all infallible signs that winter is passing and spring will soon be here.

Among the planets Venus is now resplendent in the northwest in the early evening. She attains her greatest brilliancy on the fifteenth and is drawing in toward the sun. Viewed through the telescope Venus now shows the crescent phase. Mars is in Gemini and is still a brilliant object although its distance from the earth is now increasing and its brightness is steadily decreasing. On March 28 Mars will be due south at sunset.

Jupiter is now low in the west, setting soon after the sun. It will be found a few degrees southeast of Venus.

Saturn is now in Sagittarius and on the twenty-first will be on the meridian at sunrise. Mercury reaches its greatest western elongation on March 5 and should be visible until about March 12 in the morning twilight, low in the eastern sky.

Spring begins this year on March 20 at 9:35 p.m. E. S. T., at which moment the sun will cross the equator coming north. Its northward voyage will be widely welcomed since it brings release from King Winter's hold.

Helps and Hints

FOR HOME AND GARDEN

March is the month in which you must complete all your ordering and get all hotbeds, frames and garden paraphernalia ready as proper reception committees for your plants when they come in. You have to clean up the odds and ends of the winter season, and prepare for the coming brilliant summer. So hoes and spades out, hammer and saw in action, and to work. The big Spring Push is on.

* * *

Beginning on the inside—annuals such as zinnias, asters, salvias, lobelias and calendulas can be sown indoors, or in pots under glass. Snapdragons and petunias are in this class. If you are raising your dahlias from seeds, start them, too, about the middle of the month. Be careful, however, in watering these young plants; use a fine spray, to prevent washing the seeds out of the ground. Dahlia bulbs are not planted until May; examine them, however, to make sure they have not decayed or become too dry. The Department of Agriculture has issued Bulletins F.B. 1171 and F.B. 1370 on annuals in general, and on dahlias, and as long as the supply lasts these may be had upon request.

* * *

Store the bulbs that have done yeoman service in making your home lively during the dull winter period in dry sand until the fall; then transplant them outdoors, perhaps among the shrubbery. It may take some time for them to reach the blooming stage, but the result will be worth the labor.

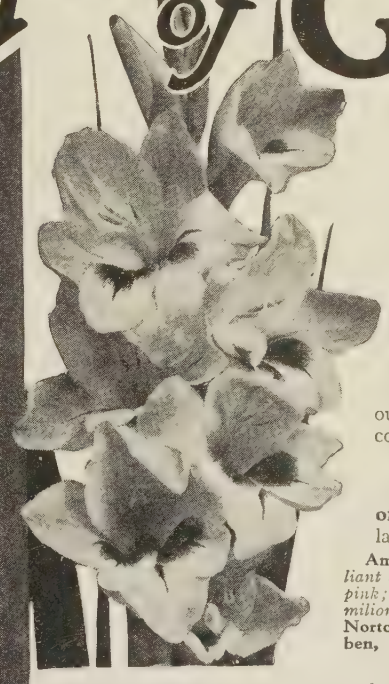
* * *

Now to get out of doors. About the middle of the month sow sweet pea seeds, about five inches deep. Pick out some spot not excessively shaded from the sun, but try to choose a place near some hedge which will serve as a windbreak. The rows should run north and south. Place the seeds two or three inches apart. It may help matters to soak the seed in warm water for a day before planting.

* * *

If you have not already done so, start pruning your ornamental trees early this month. Unless you live in the more southerly sections of the United States, do not open the tops too much, however, lest the sun start its good-will work too soon, and the sap run before its time. Shrubs that bloom on the wood of the coming year should be pruned when dormant, and some of these are the hydrangeas, trumpet creeper, ceanothus, desmodium, honeysuckle, hibiscus, Spiraea Anthony Waterer, Spiraea bumalda, Spiraea douglasi and others in this group, also viburnum tinus and the highbush cranberry. Wait until a little later, however, for roses, and do not tackle fruit trees for some time; peach trees are often left until the buds show the extent of the previous winter's damage.

A Garden Full of Gladioli



The Most Popular of All Summer-Flowering Bulbous Plants

For a number of years we have been offering a collection of 50 Gladioli Bulbs and have sold millions of them, receiving numerous testimonials as to their merits. This year we are also offering a choice collection of named varieties for those who wish to plan their garden according to a color scheme. All bulbs produced under expert supervision on our own Farms.

Special Collection No. 1

For **Two Dollars** we will send **50 Bulbs** of our **Grand Prize Mixture,** which covers every conceivable shade in the Gladiolus kingdom.

Special Collection No. 2

For **Five Dollars** we will send **10 Bulbs each of 10 choice named varieties,** separately labeled, (100 Bulbs in all) of the following:

America, *Lavender-pink;* **Crimson Glow,** *Deep brilliant crimson;* **E. J. Shaylor,** *Rose-pink;* **Halley,** *Salmon-pink;* **Herada,** *Pure mauve;* **Mrs. Francis King,** *Vermilion;* **Mrs. Frank Pendleton,** *Deep salmon;* **Mrs. Dr. Norton,** *Cream and pink;* **Peace,** *Splendid white;* **Schwaben,** *Canary-yellow.*

Simple cultural directions in each package.

Order Your Bulbs Now, so as to have them to plant when you begin your garden. Mail your order with Check, Money Order, Cash or Stamps, mentioning this advertisement, and Bulbs will be sent prepaid to your home anywhere in the United States.

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Branch Stores in **Newark, N. J., White Plains, N. Y., Baltimore, Md.**

CALIFORNIAN WILD FLOWERS

WHO has not thoroughly enjoyed the pictures of Western American Wild Flowers which have appeared from time to time in Nature Magazine, while *Geographic Magazine* of May, 1927, should be in the hands of every nature-lover to whom wild flowers appeal.

It was in 1879, when I was a seventeen-year-old boy, that I began to collect bulbs, plants and seeds here in California, and it has been my life work.

My catalogue
"California's Choicest Bulbs"

(postpaid) is yours for the asking. It is a work of art. It will tell you of West American Lilies, Mariposa Tulips, and such perennials as Lewisia, too.

CARL PURDY
Box 87, Ukiah, Calif.

Something different—something new—is the red-leaved Japanese Barberry recently offered to discriminating home owners.

This newest of new shrubs has met with instant favor since it was first introduced in 1927. The rich lustrous bronzy red of its foliage which becomes more brilliant throughout the summer, changes to vivid orange, scarlet and red shades in the fall.

This distinctive shrub resembles in color the beautiful red-leaved Japanese Maple. It has proven itself especially well adapted to mixing in shrubbery borders or for clumps on the lawn. Full exposure to sun brings out its rich coloring to best advantage.

SPECIAL OFFER

If you order direct from this ad you can benefit from the following special low **postpaid** prices on this wonderful shrub.

9 in.—12 in. Bushy Plants	65c each	4 for	$2.00
12 " —15 " " "	80c "	4 "	$2.50
15 " —18 " " "	1.00 "	4 "	$3.25

Also Japanese Azalea (Mollis) a beautiful shrub, flowers brilliant flame colored.

10 in.—12 in. Thrifty vigorous plants	65c each	4 for	$2.00
12 " —15 " Very bushy	1.25 "	4 for	$4.00

Free Catalog and Booklet Entitled "How to Plant"

Get our big 1929 Catalog that tells all about our 600 acres of **"Everything that's Good and Hardy."** The catalog is a veritable index of big values and contains a complete listing of standard and rare varieties as well as the good old favorites. Get the free booklet that tells you how to plant for best results. It is simple and easy to understand. Send your order for the Barberry today and ask for catalog and booklet.

The Cole Nursery Company

Painesville **Box 15** **Ohio**

Exclusive!

10 Exquisite Rarities for the Connoisseur. The choicest of Schling's Specialties for 1929.

A $6.00 Collection for

$5.00

New Sunshine Asters—Strikingly effective in pink, white, blue and lavender, with a cushion center of tiny quills in a contrasting color. The collection of 4 colors.....$.25

Wonderful Blue Lace Flower, Schling's Original Queen Anne's Blue Lace—Dainty, lace-like flower heads of exquisite light blue shade, on long stem.....Pkt. 50c

Mignon Bedding Dahlias—Sturdy bushes, not over 2 ft. tall, covered with lovely single dahlia blooms held erect above the foliage on slender stems. Blooms in less than 3 months from seed and continuously until frost.....Pkt. 50c

Meconopsis Baileyi—Beautiful blue hardy poppy, from Thibet on 2 to 3 feet stems bearing freely large four petalled blooms of a glorious sky-blue color.....Pkt. 75c

Giant Scabiosa, Peach Blossom—Lovely shade with numerous rows of broad guard petals and a cushion of finely laced center petals.....Pkt. 50c

Phacelia Tanacetifolia—Lovely flower heads resembling the Heliotrope of heavenly blue color carried on one foot stem.....Pkt. 50c

Gypsophila Elegans, Crimson Gem—Bright rosy-crimson Baby's Breath of fairy-like growth. Especially attractive in combination with other flowers.....Pkt. 50c

Annual Oriental Poppies—Huge red poppies with black spots, like those of the perennial varieties, on 1½ ft. stems.....Pkt. 25c

Candelabra Salpiglossis—A sensational new type, tall as Hollyhocks with large clusters of beautifully marked, Petunia-like flowers.....Pkt. 25c

Snapdragon Indian Summer—A marvelous color, rich velvety copper red—rivals the gladioli in height and vigor.....Pkt. $1.00

REPLETE with such delightful novelties and value giving offers as the above is our "Book for Garden Lovers". Send for it—25c the copy—free with your first order.

Schling's Seeds

MAX SCHLING SEEDSMEN, INC.
618 Madison Ave., North New York City

When pruning, never leave a stub, as this will eventually rot. Cut the shoot or limb at the base, flush with the parent branch or trunk. The bark will then grow smoothly over the wound, and disease will be unable to gain a hold. Never use a dull instrument, for this leaves uneven, ragged edges, the best friends of decay. And since the top bud will make the strongest growth be sure and select it carefully. Make certain that the new growth will tend to spread outward rather than directly upward, thus giving the centre of the plant the chance for sunlight and air that it deserves.

* * *

Build the hotbed this month, or if it is already built, clean it out and put the heating material in, tamping it down. Then cover with the finest soil you can discover, start your lettuces, radishes and such for early use, and your cabbages, cauliflowers, onions, tomatoes and such for transplanting later. The seeds of annual flowers may go in now, too. If a hotbed sounds like too much work, however,—and it requires as much attention as teething twins—at least have a cold frame, in which you can harden tender plants. Wait until the most serious cold of the winter is over before you plant in this. Probably the middle or late part of March will be early enough in New England and northern states. About noon of each sunny day, allow some ventilation to get in the hotbed; otherwise, there is a danger of too much heat. Watch, too, for alternate cold and warm periods, and as far as possible, keep the temperature in the bed constant.

* * *

Trees, shrubs and berries may be planted successfully this month. Magnolias, birches, altheas, and larches should be transplanted now, the birches and larches while they are dormant. Among the shrubs we recommend the Japanese barberry, which is a worthy

Star Roses

You can't fail

if you plant Star Roses. We guarantee success—either the roses bloom or we refund your money.

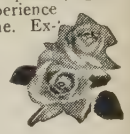
Send today for the "Star Guide to Good Roses." Over 200 roses described, many pictured in color—old favorites, many novelties, and imported prize winners.

Enclose 25c with your request for *free* "Star Guide" and we will send you our 32-page book, "Success with Roses." Fully illustrated. Tells what to do and when and how to do it. *Send today!*

The CONARD-PYLE CO., *Star Rose Growers*
Robert Pyle, *Pres.* Box 28 West Grove, Pa.

Guaranteed to bloom

ROSES *of New Castle* is the title of a beautiful book on the culture of roses and other plants; gives expert experience of a lifetime. Exquisitely illustrated in natural colors: offers and tells *how to grow* our famous plants. Write for your copy. *It's free.*



HELLER BROTHERS CO.
Box 310 New Castle, Indiana

50 Large Gladiolus $2.00

No two alike. All labeled and selected to cover the entire Gladiolus color range. Many new and rare varieties. 3 collections for $5.50. Write for catalogue describing over 100 varieties and other collections.

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Maine Grown Dahlias

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Millionaire, Lavender
Porthos, Vivid Red
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Hochsia, Autumn Shade
Mrs. I. DeVer Warner, Mauve
Snowdrift, White
Mariposa, Orchid Pink
Dream, Peach Color
Dr. Tevis, Salmon Rose

This collection of 10 famous exhibition Dahlias postpaid for $2.80. Any five $1.65. I grow only the best prize winning varieties. Tubers low priced. Catalog free.

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Our 1929 Catalogue FREE On Request

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Please mark and send this ballot to National Flower Editor, NATURE MAGAZINE, *1214 16th Street N. W., Washington, D. C., as early as possible.*

My choice of flower to be designated as National Flower is

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* * * *

IF A CLUB OR SCHOOL, PLEASE INDICATE BELOW FLOWERS RECEIVING FIRST, SECOND, AND THIRD LARGEST NUMBER OF VOTES.

First Place.....**No. Votes**.....

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(Signature or name of school or club).....

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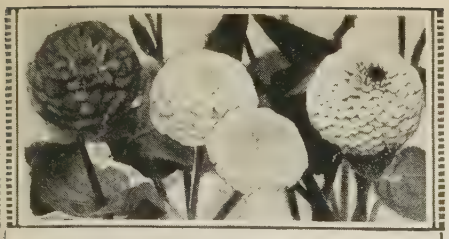

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Pompon Zinnias
Something new for your garden

These remarkable little Zinnias have round, double flowers like Button Chrysanthemums. While the slender stems make them especially attractive for bouquets, the low-growing, compact plants produce a gorgeous display of brilliant unusual colors along the edge of the garden. They are sure to bloom profusely from early summer until frost from seed sown out doors in spring.

Special offer. For 20c in stamps we send a large packet of Harris' New Pompon Zinnias, all colors mixed, together with a coupon good for 20c on any subsequent order sent us amounting to $1.00 or more.

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It's different. It shows the unusual varieties that will make your garden distinctive and tells you what, when and how to plant your favorite flowers for the best all-season results, with continuous bloom from spring until frost.

Our free catalog is worth asking for

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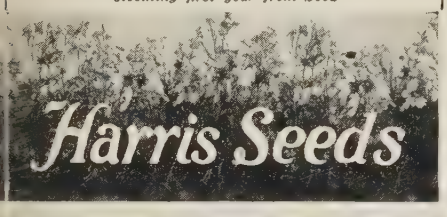
Harris' New Butterfly Delphinium blooming first year from Seed



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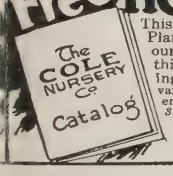
Free HOW TO PLANT



This valuable little booklet "How to Plant" will help you. Sent **free** with our big 1928 catalog that lists everything needed for tastefully landscaping your home. Standard and rare varieties. Shrubs, Trees, Evergreens, Perennials, Bulbs and Fruits. **SPECIAL**—*3 Blooming Size White Regal Lily Bulbs for $1.00 Prepaid.*

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HEALTHY IOWA GLADS: **Winners of Many Awards**
100 LARGE BULBS; Prepaid. Only **$2.75**

At least 20 standard varieties, a rainbow of colors: 50 for $1.50.

Good mixture, all blooming size and running to large No. Ones; prepaid, 100 for $1.75; 50 for $1.00.

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Rhododendron Max. and Mountain Laurel, Flowering Shrubs 2 to 4 ft. 25—$5., 100—$18., Hemlock, 2 to 4 ft. 25—$5., 100—$18. Holly, 2 to 4 ft. 25—$7., 100—$25.

Write for prices on carload stock.

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A Practical Proven Power Cultivator for gardeners, suburbanites, Truckers, Florists, Nurserymen, Fruit Growers, Country Estates and Poultrymen.

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substitute of the common barberry of wheat rust fame, upon which the Government has been waging vigorous war. The Japanese variety does not act as host for the rust, and is not banned. It is a hardy plant, rich green in summer and brilliant in autumn, with showy fruit, and very suitable for a low hedge.

* * *

We suggest that if room is obtainable, one or two firs or spruce trees be planted somewhere near the house, to serve, several Christmases from now, for Yuletide decoration. The custom of decorating living evergreens growing near the homes during the Holiday Season is becoming deservedly popular, and everyone wants to have his home as well outfitted as the others. Balsam fir, Colorado blue spruce, Norway spruce or red spruce make suitable trees.

* * *

Those whose lawns seem to have that tired look may utilize spare moments in bringing it back to its last summer's greenness at this time. Perhaps it will suffice just to massage it thoroughly with a rake, and sprinkle in some new seed, following which liberal watering takes place. If, however, the stand of grass does not seem vigorous, it will pay to remake it from the beginning. Bone meal or cottonseed meal, supplied at the rate of 20 lbs. per 1,000 square feet, will do as fertilizer, and should be applied just before the seed is sown and after the soil has been thoroughly plowed. Grass needs as good a soil as common field vegetables so make certain of your ground. Use red fescue, bluegrass and redtop for shaded places, with a small amount of *Poa trivialis*. Bluegrass, redtop and bent make good lawns. It might be advisable to consult the article by Mr. O. B. Fitts which appeared in August, 1928, Nature Magazine. This article has been made into a special bulletin, which is available on receipt of a two cent stamp.

* * *

This is the month for grafting trees to new varieties. The secret of this gardening art is to get the cambium (growth-producing) layer of the shoot next to the cambium layer of the planted stock. The cambium layer is that just outside the wood layers and inside the bark. Split grafting is generally practised on large branches, while saddle grafting is performed on small twigs. New wood chosen from the tops of bearing trees makes the best scions. Cut into six-inch pieces, make wedge-shaped at one end, and insert into the split in stock so that it fits tightly.

* * *

If peonies were not planted in the fall, try them now, if the ground is in workable condition. They may be planted in beds about four feet apart, or in rows, for hedges, at a distance of about two feet. No home should be complete without them. If any disease appears on old plants, cut away most of the root and plant on soil that is free from acid and fertilizers. About three years are needed for a complete recovery.

* * *

Remember March is the fickle month, and always keep a supply of covering handy for your beds and early garden plots, to protect against the sudden cold spells and gusty days. During warm periods, do not fail to allow your beds to get air and sunshine, however.

The First Garden thought

Is your SOIL right for growing exactly what you want?

"The ⚠ Soil conditioner"—a cross section view of the interior cell construction of ⚠ peat moss. The large internal surface area of these water cells gives ⚠ its great water holding capacity, aeration and root developing area.

THIS spring *your* garden soil will need attention!

Whether it is predominantly sandy, clayey or ordinary loam, the soil in your garden has been depleted in nutritive value and textural construction by last year's efforts and will only be capable of producing satisfactory results for you this Summer when you have properly prepared it for its work.

—and soil preparation means, not only the addition of fertilizing constituents, but conditioning its physical texture, so that it will be able to assimilate or digest the fertilizers and make them available for plant use.

⚠ peat moss—"the soil conditioner" used in proper proportions will bring your soil to the highest state of physical condition. It helps to bind together and give more body to loose sandy soil; it will break up and render more friable heavy clay soil; it makes *all* soil easy to work, highly retentive of moisture so that it will hold the plant food which has been dissolved in the soil moisture; it will prevent baking and caking, develop necessary soil bacteria and in general, condition your soil so that it is *sure* to produce better crops or flowers.

Leading horticultural experts strongly recommend ⚠ as most desirable and urge its use as the only way to be sure of results. Let us send you complete information now so that you will be ready to start right in the spring. Better still, let us send you a sample (trial) bale for early seed germination and propagating, $1.50 post paid.

E-25
Burling Slip
New York

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Beautify and Benefit with Pachysandra

The plant that grows where nothing else will grow

BEAUTY—Those ugly, bare spaces, steep banks, shrub beds and all other plantings should be carpeted with foliage. Cover planting is undeniably a ground beautifier.

BENEFITS—Landscape artists and arborists agree that aged or undernourished trees and shrubs benefit greatly by a good ground cover. Moisture is conserved . . . nourishing condition of forest soil recreated.

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Sod in six weeks! A rich, velvety stretch of lawn that chokes out weeds before they can grow! A deep, thick, uniform turf that makes your home a beauty spot! That's what you'll get if you plant Scott's Creeping Bent.

The New Super-Lawn

Creeping Bent—long recognized as the ideal grass for golf putting greens—is now producing Super Lawns. Instead of sowing seed, you plant stolons or the chopped grass—and in a few weeks you have a luxuriant lawn like the deep green pile of a Turkish carpet!

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This little book "Bent Lawns" is free to you. It is a valuable treatise on how you can have beautiful lawns. Write today for your copy.

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includes only sturdy 2-year-old FIELD-GROWN bushes of these five finest fragrant varieties:

SOUVENIR DE CLAUDIUS PERNET—spell-binding all-yellow rose (illustrated);
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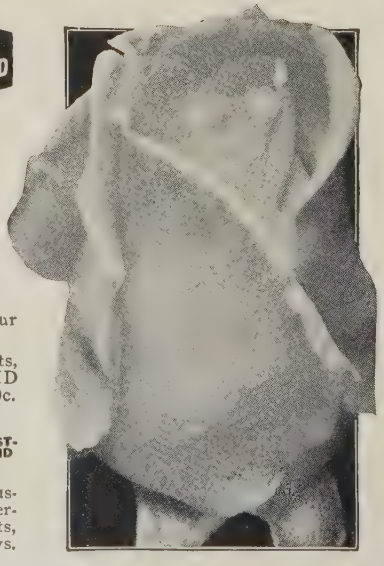
KAISERIN AUGUSTA VICTORIA, snow white;
LOS ANGELES, flame pink, gold shaded;
RED RADIANCE, unfading brilliant red.

Pick these long-stemmed, perfect, fragrant blooms from your own garden all summer and fall.

ACT NOW Send $1.95 today, while limited supply lasts, and bushes will be mailed POSTPAID when planting season opens. Beyond Mississippi River, add 20c.

GUARANTEED—40 Gladiolus Bulbs $1.00 POSTPAID
Plump, healthy bulbs, guaranteed to bloom this year. Includes eight different remarkable colors.

1929 GUIDE, FREE. Includes many special offers, illustrated in natural colors, on Dahlias, Chrysanthemums, Perennials, Evergreens, Roses, Gladiolus, Shrubs, Hedge Plants, etc. Also Collins RADIO PROGRAMS, WJZ, Saturdays.



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Arthur J. Collins & Sons, Inc. Est. 1860
Box 96 Moorestown, N. J.

It is against the policy of Nature Magazine to allow any of its readers to keep their light under a bushel, especially in matters pertaining to the garden. If you discover any new helps to home or garden—new ways of planting, new conveniences to aid around the lawn, new ways of building aquaria, arranging shrubs, planning rock gardens, or utilizing plants, we wish to know of it. New ideas are always welcome, and an exchange of them will benefit all parties concerned. Please address to Garden Editor, Nature Magazine, Washington, D. C.

* * *

Predatory Cats

The common house cat is one of the worst menaces to the increase of game birds and small game animals in Wisconsin, according to W. B. Grange, superintendent of game for the state conservation commission, who recently revealed that cats were responsible for the death of at least three-fourths of the pheasants killed in the state by predatory animals. He blames the situation upon the kind-hearted humans who rather than drown excess kittens, turn them loose in the woods, where they become wild and dangerous. He proposes licensing of cats, and the killing of those found stalking game in the forests.

THE HERITAGE OF THE AZTECS

(Continued from page 170)

your plants, wait until about ten days afterwards, then cut the tops about six inches above the ground. When the clumps are dug, be careful that the tubers are not broken. Most dahlias that are lost during the winter time are lost because of careless handling in digging and storing. Leave the clumps in the sunshine for an entire day after they are dug, and then wrap in paper. Ordinary newspapers can be used for this purpose. For those who are lucky enough to have a vegetable storage room, there is practically no problem in keeping the dahlias throughout the winter. The best temperature for storing them is from 44° to 50° Fahrenheit. They should never be placed near the furnace, or in a cellar where the temperature varies widely. It is well to look at these clumps about the first of February, and it is easy enough to tell whether they are drying out, or whether they are subject to mould or fungous growth. A sprinkling of half sulphur and half ashes, either when storing the tubers, or at this period, will protect them from further ravages of any fungous rot. If they are beginning to dry too fast, take them out of the barrel or boxes in which they are stored and lay them on water soaked papers on the cellar floor. They will then pull enough moisture from these papers to supply them for the rest of the storage period. They should be taken out of the cellar anywhere from the first of April to the first of May, and divided into separate divisions with one sprout to a division. Never plant the long spindling sprouts that may start due to the heat of spring. Pinch them off to get a sturdy sprout from which to grow next year's plant.

Thus may you carry on the heritage of the Aztecs, and enjoy creating one of America's favorite blooms.

NATURE NEWS AND VIEWS

Nature Lover Passes

The recent death of Dr. Harris H. Benedict, head of the Biological Department of the University of Cincinnati, has left a void in the Nature world which can be filled only by the development of those he taught and inspired to find their happiness in the field of growing things. A pioneer in the field of plant physiology, an evolutionist who "saw in evolution no denial of God but an affirmation of his grandeur", and a civic leader who organized botany and Nature clubs and lectured on the wonders of the out-of-doors to large groups of people, he was a force in education in the Middle West. He was the originator of the Emery Bird Reserve in Cincinnati and organized the first school garden courses there. One can say of him as much as of any man—he will be missed.

Evaluating Game Birds

Besides intangible value, wild life has an economic value which makes it an asset to the nation, according to W. C. Henderson, Associate Chief of the Biological Survey, who recently told the convention of the Izaak Walton League, New Hampshire division, that the Granite State had at least $6,500,000 more in annual income because of animals and birds. The insect destroying services of birds was alone worth $1,500,000, while the recreational values that were promoted added $3,000,000 to the tourist business. Even though no other argument will prevail to foster conservation, at least the financial yardstick will point out reasons for saving the game.

D.A.R. Conserves

With the achievements of 1927 and 1928 considered but milestones, the Daughters of the American Revolution are continuing in quickened tempo their march along the broad high road of conservation, according to Mrs. Maurice C. Turner, chairman of conservation and thrift. Early reports from state chairmen indicate that 1928 has been a banner year. More trees have been planted than in 1927, although the half a million set out during that year was considered a record. Other states have joined Massachusetts, Iowa and Maryland in being the possessors of state D.A.R. forests. The educational effects of the wild flower pledge to refrain from picking or destroying unprotected and scarce plants have been widespread, and more than 2,000 wild flower gardens have been maintained. While $20,000 was spent in 1927 for conservation alone, this figure will be dwarfed by the 1928 figure, it is believed. Every state has a constructive program related to active work for protection of wild life, wild flowers, forestry, water power and natural resources. The Daughters of the American Revolution have become fighters for practical conservation, and the field in which they are working is one in which they can do unlimited good.

Combinations:
Special Seed Collection ... $2.75
100 Giant Mixed Gladiolus 3.25
$6.00
$6.00 value postpaid ... $5.50
or 100 Gladiolus, ten named varieties ... $4.25
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SPECIAL SEED COLLECTION
One Packet Each of the Ten Listed Outstanding Novelties Valued at $3.10 for $2.75

Unusual development in both size and beauty in these beautiful old-fashioned flowers.
Larkspur: "La France." A tall variety. Large, well-formed double flowers; a beautiful salmon pink.....Packet 25c.
Aquilegia: Long Spurred "Copper Queen." Charming, attractive, useful for cutting. Petals copper red with long spurs of a darker hue. Corolla a straw color.....Packet 50c.
New Forcing Calendula: "Campfire" (Sensation). Vigorous grower, flowers on stout stems. Blooms are flat, larger than any type previously introduced. Petals brilliant orange with scarlet sheen. Full yellow center. Packet 25c.
Gaillardia Grandiflora: "Portola Hybrids." The well-known Portola variety. Reproduce satisfactorily from seed. Red with golden tip.....Packet 25c.
Dimorphotheca: "Salmon Beauty." New color in African Daisy; large flowering, true salmon shade. A remarkable cut flower and for outside planting. Packet 25c.
Eschscholtzia: "Ramona." New Frilled. Distinct type, very charming. Single, the frills give it appearance of a semi-double. Color a pale, but glittering coppery gold with pink shadings.....Packet 25c.
Fringed Petunia: "Pink Triumph." Giant blooms, clear, bright, delicately fringed. Best fringed all-pink Petunias. Beautiful in beds and borders; and for window boxes. Packet 50c.
Snapdragons: "Bassi's Seven New Giants." New. Surpasses anything yet introduced. Flowers of magnificent size much larger than the ordinary Giant Snapdragons. Grow five feet high, on strong, robust spikes. Fine variety of colors as follows: **Apple Blossom**, Rosy pink, white tube; **Canary Bird**, Canary Yellow; **Copper King**, Bronzy Copper; **Old Gold**, Yellow; **Purple King**, Deep garnet; **Snowflake**, White; **The Rose**, Begonia Rose; Giant Mixed, Collection, 1 packet each of the seven named varieties above $2.00 or.....Packet 35c.
Verbena Hybrida, "Colossea" Rose Shades and Rose Auricula-Eyed. Beautiful new race. Flowers over one inch in diameter borne on large umbels. Plants have a more upright growth than ordinary.....Packet 25c
Zinnia: Giant Mammoth or California Giant, "Miss Willmott." At last a soft salmon pink in giant size. Flowers enormous, in the most delicate, soft, salmon-pinks, flattened. Packet 25c.
Gladiolus Collection: Special Offer 10 each of 10 named choice Gladiolus, beautiful colors, each separate, 100—$4.25, 50—$2.25 postpaid.
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First Call for Spring!

WHEN we hop out of bed to the robin's reveille these bright, snappy March mornings, our thoughts turn to the lakes and the rivers and the mountains. Vacationtime! Days of fishing—swimming—hiking; and the evenings of rest and relaxation, when the wind whines in the trees and the waves slap the boats against the pier.

It's the first call of Spring!

Time to make things more comfortable at the summer home or cabin with Rustic Hickory Furniture—the furniture that's hand-built from choicest hickory in 150 different styles—both in natural wood finish and in lasting color combinations. For over a quarter century the last word in durability, comfort and rustic beauty. For every summer furniture use, indoors or out.

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MAKE *your* garden the pride of your neighborhood. This 1929 book of ours will help you by suggesting the best Flowers and Vegetables and telling you how to plant and grow them so they will look like the beautiful pictures it shows.

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Send 10¢ for CATALOG

A Class-Room Ballot

A number of teachers have been interested in quick and simple ways of conducting the National Flower Poll vote in their classes. For the larger schools where a roll call or a show of hands is not advisable, the ballot prepared by Miss Kate W. Wilson, Science instructor, of the Granite Falls public schools, may be easily mimeographed and used. Other flower candidates can be added to the list. The results may be transferred to the Nature Magazine ballot, and sent to the National Flower Editor, Washington, D. C.

Directions: 1. Put a cross mark in the parentheses before the flower of your choice.
2. Mark only one flower.

MY CHOICE FOR THE NATIONAL FLOWER:

( ) Mountain Laurel
( ) Columbine
( ) Rose
( ) Phlox
( ) Black-Eyed Susan
( ) Goldenrod
( ) Dogwood

Arctic Zoology

When the S. S. *Beothic,* returning from the Dominion of Canada's arctic patrol, docked at North Sydney, Nova Scotia, in October, great tales of doings under the midnight sun were unfolded by members of the Department of the Interior's expedition. Among the most interesting results of the trip were the stories and collections of Dr. R. M. Anderson, chief of the Division of Biology of the National Museum of Canada concerning wild life on the arctic islands. He reported a dearth of small land animals, particularly arctic hares and lemmings. The scarcity of these creatures upon whom larger ones feed has disturbed the cycle of wild life, he found, with the results that the white and blue foxes were scarce and snowy owls and large hawks were forced south to kill partridges and prairie chickens for food. A small herd of the fast-disappearing muskox were seen on the north coast of Devon Island, and moving pictures taken of it. Hudsonian white-footed mice were captured north of the timber zone. Dr. Anderson reports that many data had been gathered from Royal Canadian Mounted Police, traders and Eskimos concerning the ranges of a number of mammals of the northland, and he considers that never before has one of his trips brought such important results. Specimens of 108 birds and 19 mammals were collected.

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NITROPHOSKA

to a gallon of water, makes a rich, liquid, odorless plant food. Far ahead of any you have ever used. It is easy to use and costs only 1½c. per gallon.

100 GALLONS WITH BOOKLET—POSTPAID 65¢

This size is more economical—costs only 1/3 of a cent per gallon, since 16 ounces make 100 gallons. You can also use it dry, as a two-finger pinch every 10 days—two weeks, for flowers or vegetables, whether indoors or out, gives them thrift and health and encourages them to blossom and produce freely. Remember, Nitrophoska is pleasant and EASY-TO-USE, perfectly odorless, very soluble and concentrated: "A little goes a long way;" does not wash out but clings to soil particles and so nourishes roots for a long period. Order today. Sold by dealers.

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F. A. Kent. Fine mallow-pink	1.00
Sanhican Gold. Orange yellow	1.50
Velvet. Rich velvety crimson	1.00
Value	$7.00

The above collection of six, for $5.00

All these and other beauties fully described in our catalogue, with many splendid illustrations, mailed free on request.

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"Growers and originators of Gold Medal Dahlias."

GLADIOLUS BOOK FREE!

Send for my new 36-page Gladiolus Book, describing 175 exquisite varieties, many new. Tells how to grow. 45 illustrations. It's free!

My famous beautiful RAINBOW COLLECTION

will delight you. 1 bulb each of 30 varieties (not labeled) all colors, blooming size, planting hints included, satisfaction guaranteed, $1.00 postpaid.

H. M. GILLET, Gladiolus Specialist
Box 458 New Lebanon, N. Y.

Flowers by Air

Proof of the possibilities of gathering together in one flower show flowers of varied and exotic character and from distant geographic points is amply found in the success of the First Annual National Air Mail Flower Show held in connection with the Fourth Annual Milwaukee Post Office Employees Flower Show. This event took place in September and in addition to 430 exhibits of local source, 134 exhibits were made up of flowers brought in on wings by the Air Mail. Some cut flowers came from 2,500 miles away and all were received in excellent condition, including two parcels involved in a crash at Pocatello, Idaho. An electrically-lighted map was arranged with streamers leading from many places to the flowers brought from them by air. The show drew more than 15,000 visitors. It has already become an institution through the annual activity of the Milwaukee post office employees.

Bobwhites and Potatoes

Protecting the bobwhite is protecting the farmer and his staple, the potato, according to E. L. Mosely of State Normal College, Ohio, who recently has conducted a survey to determine the relation of closed season on the bird and the disappearance of potato beetles from many farms.

100 EVERGREEN TREES $3.50

Buy direct from the grower at wholesale

Sturdy, transplanted, well-rooted trees, four years old. You could not grow trees like these yourself at so little cost. Vigorous trees from a severely rigorous climate, that will thrive anywhere.

Norway Spruce .....per 100, $3.50
A handsome tree of rapid growth.

Scotch Pine .....per 100, $3.50
Rapid grower. Bluish green foliage. Especially good in dry sandy soil.

Norway Pine .....per 100, $3.50
Very ornamental. Long, green, lustrous foliage.

White Spruce .....per 100, $3.50
Light bluish-green. Dense foliage.

25 each of above four kinds. $3.50. No orders for less than 100. Remit with order. Trees sent at proper time for planting.

WESTERN MAINE FOREST NURSERY
Fryeburg Maine

BLAZING STAR (Liatris)

Hardy Perennial, stately, rose-purple spikes 5 ft. this fall from plants. Special offer—Doz. $1.; 25 $2.; 50 $4.; 100 $7.50 delivered free. Headquarters for budded elm trees.

H. R. MOSNAT
Morgan Park Chicago, Ill.

SHRUBS for BIRDS

Make your home, farm or preserve more beautiful, interesting and valuable. Plant flowering, berry-bearing shrubs that feed and attract birds. Suitable for city lot or large estate. Suggestions—prices free.

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20 N Blk. Oshkosh, Wis.

RHODODENDRON MAXIMUM

Fine Specimens select Clumps 2 to 3 ft. 10 for $10.00. Per 100—$75.00. Well packed. Cash. Please ask for list.

Rhododendron Supply Co. Doeville, Tenn.

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A Great Plant Guide FREE

Less than a score of lines on page one of our catalog hold the key to the entire book, open the gate to any garden you may desire! Pronounced by students the greatest guide to *naturalistic* gardens ever published, it records half a century's experience and observations. Get the proper start by writing for this free catalog *today*.

Ferns for Everywhere

With two-score distinct varieties available, you *can count* on succeeding with ferns, whether your grounds are sunny or shady, moist or dry, rocky or of a mellow nature.

Here are a few favorite collections:

No. 1 For Open, Sunny Spots, 4 varieties, 35 clumps in all for.....$5.

No. 2 For Dry, Shady Places, 4 varieties, 35 clumps in all for.....$5.

No. 3 For Moist, Shady Spots, 9 varieties, 45 clumps in all for.....$6.

No. 4 For Wet, Open Ground, 4 varieties, 40 clumps in all for.....$5.

No. 5 For Rockeries and Dry Ledges, 4 varieties, 40 clumps in all for.....$5.

Ready for shipment after middle of March. Ordering by number is quite sufficient.

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Are native wild flowers, wild Orchids, a great many hardy perennials, Rock Garden plants and, last but not least, a vast collection of native deciduous and evergreen shrubs, such as Laurels, Rhododendrons, Azaleas, Inkberry, etc. Let's get acquainted by asking for catalog mentioned above.

GILLETT'S
FERN & FLOWER FARM
7 MAIN STREET
SOUTHWICK MASS.

Protect your

plants, flowers, shrubs and evergreens against the costly ravages of insect pests. Spray regularly with Wilson's O. K. Plant Spray...the nationally recognized standard insecticide. Wilson's O. K. Plant Spray is non-poisonous, easily applied and is equally effective in-doors or out-of-doors. Recommended by the Officers of The Garden Club of America. Half-pint 40c; Quart $1.00; Gallon $3.00; 5 Gallons $12.00; 10 Gallons $20.00.

Wilson's O. K. Plant Spray is sold by leading stores everywhere and the genuine may be identified by the famous Trade Mark. Write us, if your dealer cannot supply your requirements.

Trade Mark Registered

Then there is Wilson's SCALE-O . . . the powerful

dormant spray so necessary to the successful growth of fruit and other trees. Scale-O kills Scale insects and eggs—even in Winter. Mixes readily in cold water . . . covers very rapidly and evenly. 1 Gallon $2.00; 5 Gallons $9.00; 10 Gallons $15.00.

Andrew Wilson INC.
Dept. V
SPRINGFIELD, NEW JERSEY

Dahlias from Chemar Gardens

OUR 42-page 1929 Catalogue will feature the Chemar 1929 Novelties and in addition will list the leading novelties from other growers. It contains the best Dahlias of today.

Chemar Dahlia Seed

grown in Los Angeles County. One of the outstanding Dahlias at the last New York Show was a seedling from Chemar Dahlia Seed.

Send Postal for 1929 Catalogue

It lists a wide range of Seeds, Plants and Bulbs, everything good, from the popular priced to the latest novelties.

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On Own Roots. FAMOUS as *the best for 78 years.* Millions sold. Other desirable plants, shrubs. Safe delivery guaranteed. Write for *free* copy

"New Guide to Rose Culture"

for 1929, exquisitely illustrated in natural colors, tells how to grow these famous roses and other plants. *It's free.* Write today. A post-card will do.
THE DINGEE & CONARD CO., Box 307, West Grove, Pa.

250 GLADIOLUS 25c Most gorgeous, brilliant, beautiful assortment Every color and shade imaginable including many choice kinds not usually offered at a low price. **250** small bulbs (bulblets) for only **25c, 1250** for **$1.00,** postpaid.

White, Cream, Buff, Yellow, Orange, Apricot, Shell Pink Lilac Pink, Deep Pink Rose, Lavender, Scarlet, Crimson, Maroon, Purple, Mottled, Variegated and Suffused.

BURGESS SEED CO., 340 G. M., Galesburg, Michigan.

CATALOG FREE

Wisconsin Reforestation

Wisconsin bids fair to be one of the leaders in reforestation if the plan advanced by Conservation Director L. B. Nagler is adopted by the counties of the state. Through the Conservation Commission, he offers to supply annually nearly a million young trees, most of the output of the state nursery, to the counties if they will plant tax-delinquent lands that are not suitable for agricultural purposes, and predicts that with cooperation from boy scouts and tree enthusiasts, costs would run less than $4 an acre. He advises placing the first reserves along trunk highways, so that passersby may learn the lesson, and carry it back to their homes.

Albino Trout

The Beaver State of Oregon is the home of many unusual things, but among the wonders that the Webfooters are admiring now are eighteen albino trout placidly swimming around with their more colorful brothers in the Ocean Park fish hatchery near Newport. Some are pure white with pink eyes, some have silver spots and a few have bright pink spots. Carl Ryckman, proprietor and manager, hopes to produce large quantities of them. David Starr Jordan, president emeritus of Stanford University, informed by Joseph Patterson of Newport of their existence, said that he had never heard of such a large number of albino fish collected in one place, and urges research to determine the cause.

Free Wild Flower Films

Two standard motion picture films of wild flowers in their native haunts, each one thousand feet long, have recently been prepared by the Motion Picture Laboratory, United States Department of Agriculture, Washington, D. C., in co-operation with the Wild Flower Preservation Society of Washington, D. C. About sixty subjects are included in each film. There are close-ups and mass views, slow pictures of the water lily and magnolia opening and closing and many flowers with blue and yellow are stained in approximately natural colors.

$1.00 GLADIOLUS $1.00

Glad's are my hobby, but they multiply too fast. Will dispose of my surplus at $1.00 a doz. Rare beautiful large flowering bulbs. All different and separately marked named varieties. Will be glad to send prices on all varieties of gladiolus, satisfaction guaranteed. Order early.

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Norway Spruce—Arbor Vitae—Col. Blue Spruce.
We specialize on small evergreens.
Evergreen and ornamental catalogue free.
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Walsh Garden Tractor
and Power Mower
Plows, Seeds, Cultivates, Mows Lawns & Hay
For Gardners, Florists, Fruitmen-Walk or Ride
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John W. Hershey, Nut Trees, Box 65 (1), Downingtonn, Pa.

Schenley Gardens Inc.

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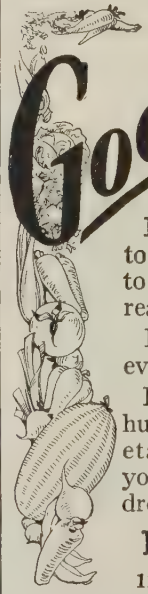

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I was named for the "City of the Angels," where I was born and where they love me so much. My petals are a beautiful grenadine or orange tinted pink. They call me

The "Cut and Come Again" Glad

because I often send up new spikes after the old are cut. I am the nearest

EVERBLOOMING

but not quite as that is not possible. I often give over 100 blooms from one bulb.

They say I am exquisite and they love me in Hollywood, Beverly Hills and everywhere. I want you to love me, too.

My Daddy says I may come and bloom in your garden this Summer. I want to. May I? Just send my Daddy $1.00 for 20 "me's" 4 big, 6 medium and 10 small. Even the little "me's" promise to bloom for you if you treat us nice. Or you can have 12 big "me's." I'll hop on the next train. Meet me at the P.O. I'll be wearing a postage stamp.

I'd like to bring a few of my little brothers and sisters. La Verne (Canary flushed pink, throat carmine) and Mary Jane Coole (Coral pink, pomegranate throat) are each 25 cts.; Crepe (Begonia rose with ivory lines, resembles Crepe) 50 cts. each; beautiful mixed 50 cts. doz.

My Daddy writes a little book every year called "New Creations in Gladioli, Iris, Amaryllis and other Bulbs." Some people say it's clever and interesting. It's free.

Dept. N, C. E. HOUDYSHEL, San Dimas, Calif.

RHODODENDRONS, Maximum, Catawba, 2-4 feet, Old English Box 50 years old, specimen plants, 2 6 feet, **Norway, Sugar, Silver, Sycamore maples, European** and **American Planes** 8-10 feet.

Special prices to estates and others.
Jones Nursery Company **Woodlawn, Virginia**

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Beautiful flowers and luscious, tasty vegetables, the kind you would like to see growing in your garden—read all about them in the new 1929 edition of Burpee's Annual—the Leading American Seed Catalog.

free GARDEN BOOK

This is the catalog that tells the plain truth about the best Seeds That Grow. It is a beautiful book of 172 pages, offering the best in Vegetable Seeds, Flower Seeds, Lawn Grass, Bulbs, Roots, Fruit Trees, Flowering Shrubs, and Roses. It will be mailed free.

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10 RARE VARIETIES $1.50 Postpaid to your door. All different colors. Guaranteed. Vigorous tubers that will grow big, brilliant-hued blooms on strong, straight stalks.

GLADIOLUS—50 for $1.00; 100 for $1.75; 20 varieties—all different colors; rich tints; darks and lights.

Order now. Shipped at planting time.

FREE—140-page Catalog of Seeds, Bulbs, Plants and Shrubs. All prices include postage.

FREE with EVERY ORDER of $1.00 and OVER A "JERSEY BEAUTY" DAHLIA! WORTH $1

JOHN LEWIS CHILDS SEED CO 53RD YEAR
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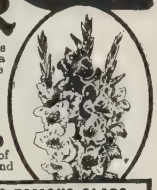
GLADIOLUS SPECIALS FROM PFEIFFER



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100 PRIMULINUS GLADIOLUS $1.00 "Collection P"—Blooming size. Shades of Orange, Salmon, Pink, Yellow, Buff, and blending colors. 100 bulbs, only $1.00.

100 Extra Choice Gladiolus $2.50 Some of best known varieties in the world, also some of the rarest varieties. Best blooming size bulbs, worth $5.00. Our special, 100 bulbs for $2.50. Other collections and varieties, Write

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2 FAMOUS GLADS FREE Everyone ordering one of our $2.50 specials will receive as an Extra Gift a Los Angeles, "The famous cut, and come again" variety and a Mrs. Leon Douglas, large, flame color.

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Instructions for building, planting and taking care of pools of all sizes in our 1929 free catalog. Beautiful illustrations, some in natural colors. Over 100 rare lilies and other water plants. Includes list of collections for as low as $3.00. All prices unusually reasonable. Collections sent postpaid. Take advantage of this offer.

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About Bird Friends

Bird Companions by Angelia Kumlien Mann is not just from the press but it has only recently come to our attention and is most worthy of notice in our review columns. This volume is devoted to descriptions and biographies of one hundred and fifty song birds found east of the Mississippi, and gives special attention to birds found in the State of Wisconsin. It is illustrated in color and black and white, equipped with a key for identification and is introduced by Robert Ridgway and dedicated to the author's grandfather, Thure L. Kumlien, to whom all Nature students are in debt for his pioneer studies in Wisconsin. Numerous verses, selected with rare judgment, and often original, add much to the attractiveness of the volume. The book is sold by the author herself and can be ordered from her at Alfahill Farm, Fort Atkinson, Wisconsin, for three dollars plus ten cents postage.

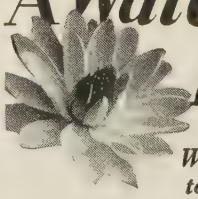
Here and There

When John Van Schaick, Jr. is not busy editing his very excellent *Christian Leader* he has a wont to cruise about where Nature is. His is the seeing eye and he loves to note Nature in her various moods and manifestations. These cruisings and musings he has set down in the pages of his publication and, now, happily, he has gathered them together between covers in an entertaining volume entitled *Nature Cruisings*. The author has travelled here and there and seen the wild world about him, whether it be in the Fenway of Boston or along the Potomac's gorge or back in the old home town. It is a random book to be enjoyed and read in the spirit in which it was originally written and assembled. There is nothing on our copy to reveal its cost but it is certainly obtainable from the Universalist Publishing House, Boston.

Being a Countryman

Chronicles of a Countryman is written in Walter Dyer's very best style—there is humor, common sense, philosophy and rather picturesque cartoons of country life. The volume might be called an apology for rural existence; it shows the city dweller just why some members of the same species prefer clean air to frigidaire, and green fields to sidewalks, skyscrapers, and dinner dances,—and to our minds, the argument is convincing. While the book moves rather slowly and lazily, more in the fashion of a wide stream than a mountain brook, and while the joys it pictures are more the quiet, peaceful ones rather than the big thrills that come occasionally from contact with Nature, yet it may be a factor in stemming the rush to the metropolis—who knows? Ives Washburn of New York is the publisher.

A Water Lily Pool-



Will Add Charm to Your Garden

COLORFUL, fragrant, beautiful, a Water Lily Pool will add immeasurably to the charm of your garden.

There is room in your garden, no matter what its size may be, for a pool, or at least a sunken-tub of water lilies surrounded by quaint aquatic plants, and bordered by rocks. Some of the very prettiest pools are located in small gardens.

Complete Water Garden for Only $5

Your choice of pink, blue, yellow or white Water Lily; 6 Aquatic Plants; 6 Border Plants; Water Lily Tub and Pair of Snails. All for $5.

For Your Aquarium

12 fancy Goldfish, pair each of Fantails, Telescopes, Comets, Albinos, Calicos and Moors (black). Also pair of Jap Snails and 12 Black Ramshorn Snails. All for only $12.

Send for FREE Catalog
(Illustrated in Colors)

It shows you how you may enjoy a Water Lily Pool this spring; tells how to build a pool, inexpensively; how to plant a sunken-tub pool; describes the fascinating, yet simple, culture of Water Lilies, Aquatic Plants and Ornamental Fishes. Write for your Free copy TODAY.

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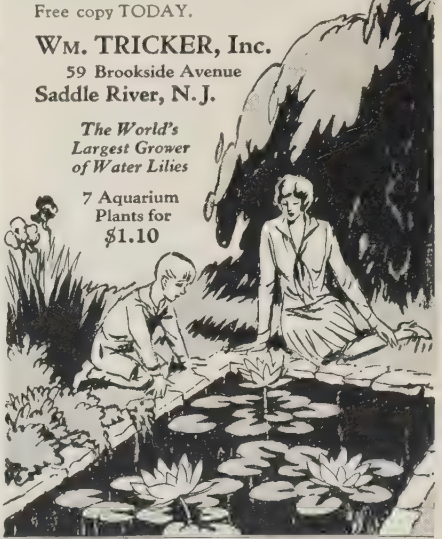
The World's Largest Grower of Water Lilies

7 Aquarium Plants for $1.10



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(as pictured)

Evergreens lend beauty to your home every month in the year.

Our years of experience as nurserymen and landscape architects has enabled us to determine the best varieties of evergreens for lawn and foundation plantings and we have chosen this splendid evergreen collection as most suitable.

$15

Take advantage of our 63rd Anniversary offer to beautify your home at small cost.

What our Offer includes

1 American Arbor Vitae—2-3 ft. Excellent specimens for planting tubs, vases, or jardinières for winter decoration of porches, etc.
1 Norway Spruce—2-3 ft. A tall picturesque tree, popular as an ornamental.
1 Irish Juniper—2-3 ft. A slender columnar form much in favor as an ornamental.
1 Red Pine—2-3 ft. Pines are strong rapid growers thriving better on poor soils than on extremely rich ones.
1 Austrian Pine—2-3 ft. Attains a height of 60 to 150 ft. A robust grower.
1 Globe Arbor Vitae—18 inches high. Symmetrically globular in form and of low dense growth.

Plant Evergreens this spring

The most favorable planting season for evergreens is the latter part of April or May. "Glenwood" Evergreens come carefully packed with a ball of earth protecting the roots and wrapped in burlap. The anniversary collection comes to you as shown in the photograph, securely packed in strong wooden case ready to plant. All you need is a spade and some spare time.

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This is your opportunity to obtain fine evergreen plantings at small cost. They won't last long at this price.

Write for our handsome catalogue in color describing fully our complete landscape service and extensive line of trees, evergreens, perennials, etc. Ask for Catalog H.

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Improved Nature Study

If Tom Sawyer had been a naturalist, every third boy in the country would have tried to be one at one time or another, for the influence of a hero, even if fictional, is great. Working on this principle, Albert E. Shirling of Teachers College, Missouri, has created two real boy characters, Tom and Roger, to furnish by their exciting experiences in the field of Nature inspiration for Nature study classes, and filled his text book, *Outdoor Adventures,* with their exploits. The boys fish, find homes made of paper and clay, hear insect musicians, feed birds, listen to different animal sounds, in short, sojourn close to Nature with more happening to them than happens to a Chicago detective; and no class, reading about them, will fail to desire to follow them This most valuable text for Nature study and Natural Science classes is published by the World Book Company.

Curious Questions

One of the most interesting features of many publications is the questions and answers department. People like to ask questions and read the answers to queries from others. *The Pathfinder* maintains such a department and draws upon the vast answering resources of our government to give its readers complete answers. One of the editors of the estimable journal is George W. Stimpson and he has compiled a volume from this source. Selecting a great many of the most interesting and unusual inquiries, he presents them in a book entitled *Nuggets of Knowledge.* It is the sort of volume it is a delight to have around, handy to be picked up for a few moments and glean a nugget or two from the mine it is. The book has a fine index making it all the more valuable. It is published by George Sully and Company, New York, and is well worth its price of two dollars.

Out-of-Doors in Poetry

Willis Hudspeth has put the touch of the primitive and the wild in his collection of poems, *Sketches of the Out-of-Doors,* recently published by the Colonial Press of Omaha, Nebraska. Into his vigorous, direct verse he drives sharp pictures of a Nature that is more rugged, less conventional, somewhat more stirring than the majority of writers see it. He writes of reality, not romance, yet he catches the spell the out-of-doors always brings. For those who become tired of the usual sentiments we recommend this booklet.

History of Skiing

Exhaustive in detail is *A History of Skiing,* by Arnold Lunn, vice-president of the Ski-Club of Great Britain. It takes the great sport from five hundred years after Christ, and carries it through the 1926 winter contests. Not only does it give a history—it describes ways of skiing, of judging contests, it lists important ski-clubs, their rules and their climb to fame, it tells of important contests and ski-trips, and gives biographies of those who have made history in the sport. Published by Oxford University Press, sixteen shillings net.

Now it's easy to grow a

WEEDLESS LAWN

". . . Extensive tests have shown that Ammonium Sulphate (Sulphate of Ammonia) is the best lawn fertilizer on the open market. There are two reasons for this: Ammonium Sulphate is rich in nitrogen, and it is nitrogen that produces leaf growth and, second, it produces an acid reaction that is detrimental to practically all weed growth and not harmful to common turf grasses."—Prof. Albert A. Hanson, Purdue Experiment Station, in April, 1928, Nature Magazine.

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Reg. U.S. Pat. Off.
Sulphate of Ammonia

No tiresome, back-breaking hand-weeding is necessary when you fertilize your lawn with Arcadian Sulphate of Ammonia. One application of Arcadian and your lawn will show a wonderful improvement—much healthier grass, much fewer weeds. Continued Arcadian treatment will enable the desirable grasses to crowd out the weeds and give you a velvety, weedless turf.

Arcadian is easy to apply. Just scatter it on the soil when the grass is dry and sprinkle thoroughly. Arcadian looks like fine, dry sand—makes no mess on the lawn and has no odor, no filler, no weed seed. Just concentrated plant food (20¾% nitrogen) 10 lbs. fertilizes 2,500 sq. ft. of lawn.

Ask the dealer from whom you buy your lawn and garden supplies for Arcadian Sulphate of Ammonia. Or write us for a 10- or 25-lb. bag. The 10-lb. bag costs $2.00 and the 25-lb., $4.00—delivered at your door.

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Ammonia-Benzol Department
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Kalmias
Rhododendrons, Azaleas

Highest quality collected plants shipped from the Appalachian Mountains in any quantity. For specimen and special planting we furnish nursery-grown stock from our Stroudsburg nursery.

Catalogue of Nursery-grown Plants, Cultural Directions, etc., mailed on request east of Mississippi River.

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PARROT'S FEATHER
Beautiful House Plant

The Parrot's Feather is a handsome, drooping, fern-like water plant, with delicate feathery foliage. An ideal plant for hanging baskets, wall vases, jardinieres, window boxes, water-tight vessels and aquariums. Grows rapidly in the house in either soil or water. It requires very little care or attention and thrives when other plants fail. Nothing more interesting or attractive as a table or window plant, and is admired by everyone.

Send today for one or more of these beautiful house plants. **25c each; 3 for 50c: 7 for $1.00,** postpaid.
Burgess Seed & Plant Co., 340 P.F., Galesburg, Mich.

GLADIOLUS. 100, post paid $5.00, 50 for $2.50. Price list free. **W. T. PANKEY, Wheaton, Illinois.**

Add to the beauty of your roses

PRIZE-WINNING roses frequently develop under the stimulating, health-giving qualities of wonderful Fungtrogen. This spray banishes the dread Black Spot and Mildew from rose leaves. The leaves are cleansed of this fungus and the whole plant nourished, resulting in profuse blooming.

By regular use of Fungtrogen any amateur can have professional blooms. Plants respond at once and seem gratefully to say "Thank you." A trial will convince the most skeptical.

Easy to apply, simply add water and use. Invisible. No discoloration of leaves. Endorsed by leading horticulturists. ½ pint makes 16 quarts of spray.

Prepaid: half pint $1, pint $1.50. Ask dealer or send check.

Companion sprays: Aphistrogen kills aphis. Insectrogen kills leaf-chewing insects. Ask for free bulletin, "Black Spot Control."

ROSE MANUFACTURING CO.
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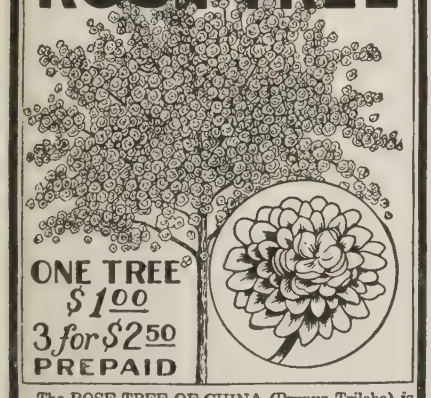
ROSE TREE



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In the Desert

We like *Desert Mavericks.* We saw it in manuscript and liked it then and are glad that it is now in the form of an attractive book. The author and the illustrator is Eve Ganson and she has done a Who's Who of desert wild life in most amusing fashion. The book is made up of some humorous drawings with entertaining little verses. It would be a delightful gift to one who knows the Southwest or to one who would like to know it. It sells for two dollars and is published by Wallace Hebberd, Santa Barbara, California.

Nature Poems

For those who enjoy Nature in poems there has just been published a very delightful collection under the title of *Neighbor Nature,* by Emma Peirce, published by The Jordan-Frost Printing Company, Bangor, Maine. Miss Peirce has caught the true spirit of the great outdoors in her poems and her readers will find in them a keen interest in "poetic" flowers of all sorts, brooklets, sun-rises, byways, and which should be enjoyed by all lovers of Nature and others, too, beside open fire-places this Winter.

Another extremely interesting collection of poems is that by Wilfrid Earl Chase published by himself at Madison, Wisconsin.

For Lovers of Soil

Fodder for farmers' thoughts in *The Landcraft Creed,* a short statement of faith to which every agriculturalist might subscribe, which has been written by Bert Huffman of Landgon, Alberta. "Landcraft is the science of knowing, trusting, and understanding Mother Earth. It is the science of growing things, of producing the beautiful and wonderful miracle of the harvest", he writes, and urges those who dwell near the soil to love their profession and to study all the aspects of it. "I am going to be a student as well as a farmer." the credo reads. "All the libraries of the world are open to me, all the schools, colleges, books, newspapers and magazines; so I am going to educate myself." If every farmer should really believe and carry out the philosophy Mr. Huffman advises there might be a less serious farm problem.

A Long Vigil

For forty years Henry Edwardson watched over the birds of North Scotland from his lonely headland of Herma Ness, on Unst, the most northerly inhabited island of the Shetland group. This year he died, and the great skuas, which he had saved from extinction, and partially tamed, lost a friend and protector. His appointment to the lonely task came from Edmundsons of Unst, but the Royal Society for the Protection of Birds learned of him, and built him a snug hut for his home. In 1924 they awarded him their silver medal. Only during the winter did he leave his post, and only his daughter, living five miles away, was a regular visitor. The skuas alone knew him well.

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PRIVATE LANDS MUST GO

(Continued from page 179)

coming events will be of utmost importance. By the force of their opinion, they can prevent delay by selfish individuals seeking exorbitant prices. From them money to release government funds shall come. They can direct future park legislation, and prevent inferior sites from being made national parks. Theirs are the parks; it is for them to keep a watchful eye over them.

For the present the Yosemite situation overshadows every other, but Mr. Fleming and the other officials of the Fresno lumber concern know the desire of the people. They have, it is believed, no wish to do other than the fair thing. Unless their acts in the past count for nothing, when the time comes they will sell at an equitable price. And the American public will duly appreciate their action.

* * *

Poems of Birds

Twenty-one poems about birds, written to inspire deeper appreciation of our feathered friends, have been written by Bert Dayton, gathered into a little volume called *Bird Rhymes* and published by the Palisade Press, 125 Church Street, New York City. The book sells for one dollar.

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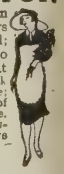

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School Reading

The failure of programs of miscellaneous reading in schools was due to the fact that it developed not students but dilettantes; there was no depth of knowledge. Now literature is being organized as to subject matter, and pupils will have the opportunity to get a little more closely acquainted with ideas before they are snatched away and others substituted. One of the most recent aids of the new plan is the series of literature books designed for the Junior High school and written by William H. Elson, Christine M. Keck and Mary H. Burris. In the two of the three books of the series which have already appeared, selections are grouped under four topics —the World of Nature, the World of Adventure, the National Inheritance and Freedom, and the Literature and Life of the Homeland. Ample forewords and summaries keep the student's mind aligned with the purpose of each topic, which is to foster a genuine interest and personal research. All the old favorites and many modern writers are included. Scott, Foresman and Company publish these most valuable additions to educational method.

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In the Desert

We have received from Professor Charles Lincoln Edwards, Director of Nature Study in Los Angeles, a copy of an interesting little booklet entitled *A Story of the Colorado Desert.* It has been distributed in sets of thirty to three hundred elementary schools in Los Angeles and is used in unifying Nature Study with oral and written language, history and geography.

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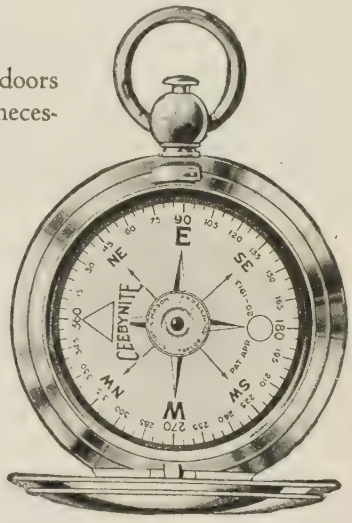

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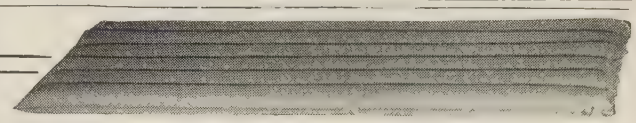

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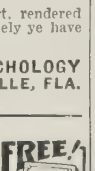

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Following the Sunshine, Simple Lessons in Human Anatomy, Protection Against Infectious Diseases, Transforming Personalities, and Answers to Health Questions are a few of the other splendid health features for the March HYGEIA. With its store of articles by medical specialists, HYGEIA is always ready to help you in solving your health problems. Read it regularly if you would keep well. Below is a special introductory offer that you should not miss, for HYGEIA'S rate is regularly $3.00 a year.

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For the beginner in the study of insects James G. Needham, Professor of Entomology at Cornell University, presents in *Elementary Lessons on Insects,* an immensely valuable volume. It is, in effect, an outline of a brief introductory course in entomology. It seeks to establish a sound basis of knowledge of the essentials of insect structure, development and habits, and it does so with a new selection of material. It is primarily for the use of the teacher and a distinct contribution to entomological-educational literature. The publisher is Charles C. Thomas and the list price is $3.50.

A Real Dog

Percival, Plain Dog came to us not primarily for review but we wish to give it notice. It is written by Jemima Remington, who is Mrs. Bevans, editor of *The Humane Pleader,* the excellent Canadian humane magazine. Our copy is one out of a small private printing made by Mrs. Bevans, a few copies of which remain. We hope, however, that some publisher will see fit to give Percival wider circulation.

Answering the Whys

The Science of Things about Us is the title which Charles E. Rush and Amy Winslow give to a new science textbook brought out by Little, Brown and Company. It answers many of the youthful questions which arise in the home and in the classroom. It presents simply the whence of many of the things about us and should be most useful to both the science and geography teacher.

Two Forestry Books

Two excellent forestry books have just been added to this section of our Association library,—*Foundations of Silviculture* by Prof. James W. Toumey, and *Forestry in Wisconsin,* the official report of the Wisconsin Commercial Forestry Conference. The former is primarily designed for the technical field, while the latter brings out many important details of the forestry problem, primarily from the Wisconsin viewpoint.

Florida Trees

The interesting little tree-guide, *Tropical Trees in Florida,* which Miss Nellie Irene Stevenson recently brought out for the enlightenment of those going southward, may be obtained at fifty cents the copy from the author at Fayette, Iowa. January Nature Magazine inadvertently noted the place of distribution as Fayette, Indiana.

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Speaking of ADVENTURES

we were bent on taking motion pictures of those wild red foxes 'way over back of farmer Alvord's place, but what a battle of wits we got into! The old lady moved her cubs three times. Twice we were able to follow—then she lost us. Two weeks of work and 180 feet of film—but what films!

Then I perched three hours 60 feet up a sugar maple, concealed under my "magic carpet" blind, and took rarest shot of red-tailed hawk arriving home, mouse dangling from her beak like a princess's earring!

Also this season, up in Nova Scotia, I captured the shy minister gull on m/ motion picture film, and intimate camera interviews have I had with the osprey.

These *trophies* will be added to the already rich material included in my illustrated platform lecture—*Wild Life Adventures*—a favorite among schools and, I am told, an inspiration to students and teachers alike.

There are other subjects, too, including *Cruising the Canadian Labrador,* a pictorial story about the now famous Greenely Island country.

Let me send you an illustrated circular.

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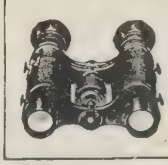

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Zoo Mammals
A Nature Bibliography, E. Laurence Palmer
School Nature Bibliography, Anna B. Comstock

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Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature

QUESTION: *How long do elephants live, and what are some of their breeding habits? —W. I. S.*

ANSWER: Elephants have been known to live in captivity for more than one hundred and thirty years, and undoubtedly often live longer than this. They begin to breed at the age of fifteen or sixteen, and may have young as often as every three years, although this frequency is unusual. They continue to bear young until quite old. The period of gestation is from eighteen to twenty-two months. The young at birth weigh about two hundred pounds.

QUESTION: *How may my goldfish, living in an outside pool, be cared for during the winter? Is it necessary to bring them indoors?—H. M.*

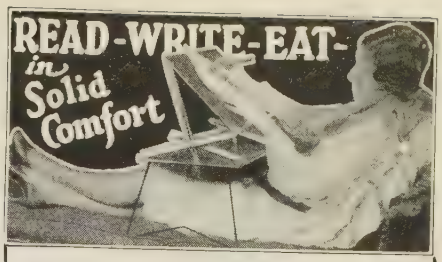
ANSWER: If your outside pool is deep enough so that a considerable amount of water remains unfrozen, the fish will winter there without special care. If the water is reduced to a small amount, however, the oxygen in this remaining portion may be insufficient for their needs.

QUESTION: *I would appreciate very much any effort on your part to clear up for me the question of hunting. Is it right or wrong?—M. L. A.*

ANSWER: The question of hunting for sport, or not hunting, is one that each must settle for himself, but it is a question that yearly is becoming more important. Up to 25 or 30 years ago, there was no such question, but the rapid depletion of our wild life makes it evident to many that hunting must be much curtailed. Tramping in the open without a gun will benefit one physically as much as hunting will, and more will be learned.

California Parks

Reporting favorably on 125 park projects distributed throughout California, and strongly urging the preservation for public enjoyment of California's ocean beaches, her forests and other outdoor attractions, the official report of Frederick Law Olmsted, director of the State Park Survey, has been transmitted to the Governor and the Legislature by William E. Colby of San Francisco, chairman of the State Park Commission, through the Department of Natural Resources. This Survey just completed was carried on by the State Park Commission in compliance with an Act passed by the 1927 legislature which also created the Division of Parks in the new Department of Natural Resources and authorized a $6,000,000 State Park Bond Issue to be matched dollar-for-dollar with private gifts and local funds. This Bond issue, on November 6th, was ratified by the voters by a vote of almost three to one and it is as a guide to the Commission in the expenditure of State Park Bond Issue funds that the results of the Survey just completed will be used.



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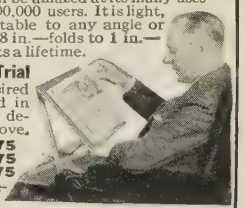

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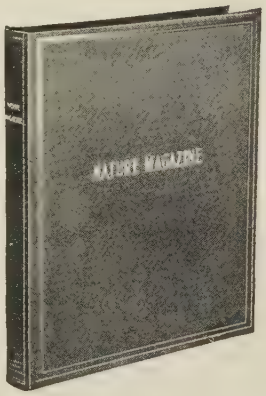

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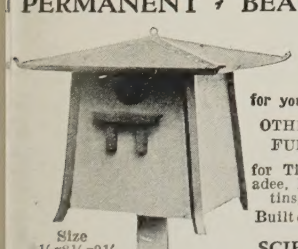

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BIRDING IN SOUTHERN FRANCE

(Continued from page 174)

which we had found so common on the moors of England: all these and more were there in never-ending procession. We were pleased to learn that a definite movement has been started to establish a wild life sanctuary in the Camargue, under the protection of the French government.

Another very common bird everywhere in the south was a black or dark gray and white warbler, with a gleaming red eye. In French he has a very impressive name: *babillarde mélanocéphale,* meaning black-headed warbler, which despite its length and formidable appearance is better than the English name, Sardinian warbler, since it really tells something significant about the bird.

The outstanding feature of the bird life in southern France was the numerous flocks of goldfinches and serins which we saw and even more conspicuously *heard.* They seem to congregate there in the winter. But more clearly than almost all other impressions, we remembered that sweet tinkling flight song of the European goldfinch and the continuous lisping twitter of scores, even hundreds, of serins.

About Orchids

From Europe comes to us a private printing of *Mutation with Orchids,* written by Lucien Reychler, and published by Geomaere, printer to the King, Brussels. This album is as beautiful, nearly, as the flower it discusses,—the full page pictures are masterpieces of photography and reproduction; the printing is of unusual quality. M. Reychler illustrates with text and pictures the results obtained by crossings with mutants of *Cattleya.*

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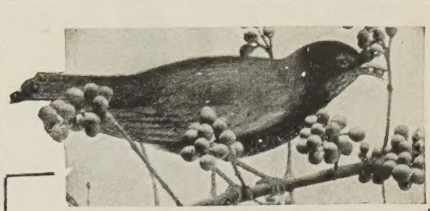

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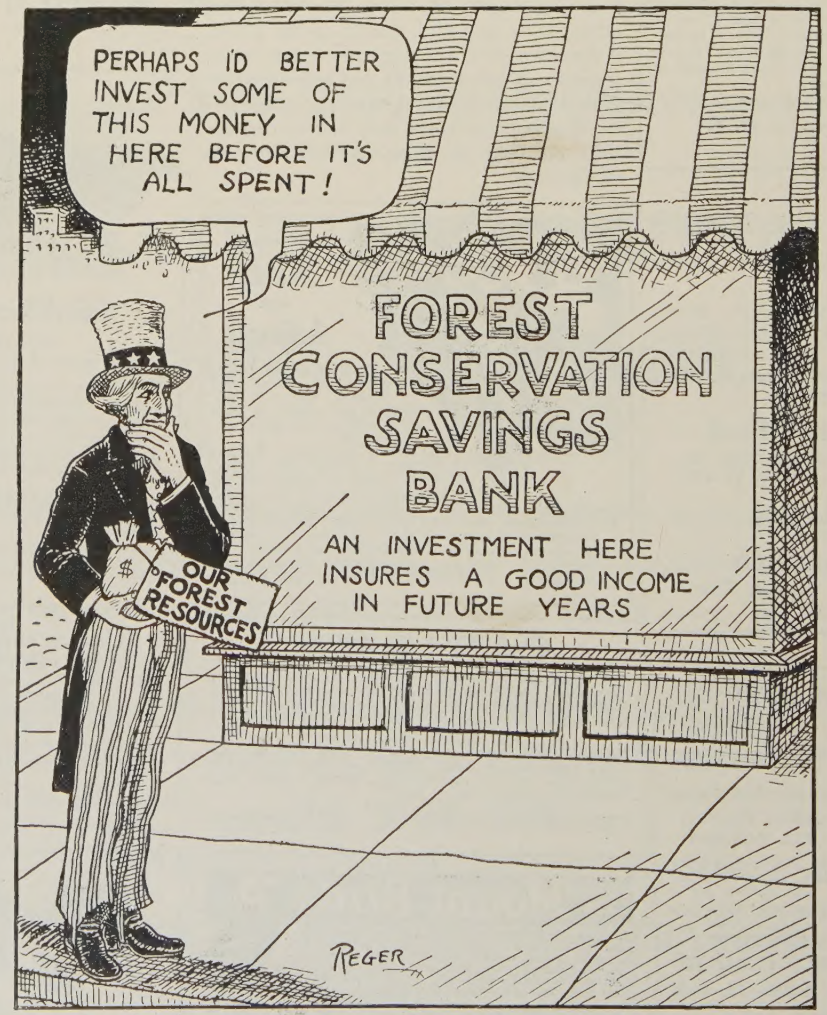
RUSSELL T. EDWARDS
Educational Director

THIS IS the time of year the tree planter banks for the future. The tree planter looks ahead to the time his trees will produce a crop. That crop may be fruit, nuts, blooms, or shade but always beauty. Nature, now awakening to the call of spring, reminds man once again he must sow if he would reap. The crop is for his use. The proposition is the same as putting money in the bank for a rainy day. Just as the tree planter looks ahead, so our business concerns should look ahead and demand the millions of acres of idle land in the country be put to work growing trees. It is simply an investment for the future and the investment will be made just the moment public opinion demands it. That person called the consumer should be loud and unanimous in his demand right now because the cost of wood affects every single thing he buys. Timber grown in our national forests can never supply more than a pitifully unimportant fraction of the wood that we need today and that we are going to continue to need throughout the future. A great deal of our national forest land contains no tree growth, and never can—some of it is above the timber line and some of it is in dry, arid regions, where no trees grow. So, although forestry on our national forests has an important purpose in pointing a way to correct forest practice and to conservative cutting, it cannot hope to solve our problem by timber production. Forestry aims at the growing of continuous crops of timber on all of our available timberlands. Here, too, progress is being made, but more public sentiment is needed. Slowly but surely this public sentiment is being created particularly in the youth of the land through the school teachers who are using 2,600,000 Forestry Primers given them by the American Tree Association. These Forestry Primers tell of the forestry situation in the United States. The pupils of today are the citizens of tomorrow. They are the ones who will feel the pinch of the high cost of forest products even more acutely than we do today. Hence we ask the tree planter to speed the message of the trees at this time of year in particular. He can have the help of the Forestry Primer and the Tree Planting Book by asking the American Tree Association for them. He can be very helpful in getting the message before Women's Clubs, Scout organizations and Outdoor Associations everywhere if he will tell us the officers in charge. He will thus become the agent who starts public opinion in another direction, one in which it may not have been directed. Thus will we be forestry minded.


PERHAPS I'D BETTER INVEST SOME OF THIS MONEY IN HERE BEFORE IT'S ALL SPENT!
FOREST CONSERVATION SAVINGS BANK
AN INVESTMENT HERE INSURES A GOOD INCOME IN FUTURE YEARS
$
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